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Volume 37 No. 79

THE ECONOMIC RECORD

September, 1961

A. R. HALL: The Australian Economy, August, 1961 257

Articles

SIR JOHN CRAWFORD: The Significance of Recent Developments in Asia for the Economic Future of Australia 273

R. F. HENDERSON: Monetary Policy in Australia 1960/61 294

E. G. JACOBY: Some Demographic Observations on First Order Birth in the Light of the Cohort Approach 308

HARRO BERNARDELLI: The Origins of Modern Economic Theory .. 320

N. F. LAING: Factor Price Equalisation in International Trade and Returns to Scale 339

F. H. GRUEN: Crying Over Spilt Milk 352

K. H. BURLEY: The Organisation of the Overseas Trade in New South Wales Coal, 1860 to 1914 371

Notes

Z. M. ZUBINSKI: The "Built-in-Stability" of the Australian System of Taxation, 1943-1959 382

B. J. GORDON: Three Hire Purchase Surveys 386

News and Notes 389

Reviews (see inside cover) 391

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MELBOURNE UNIVERSITY PRESS

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REVIEWS

BLYTH, C. A. *The Use of Economic Statistics* .. H. F. LYDALL 395

DAVIES, Gethyn. *Central Banking in South & East Asia* .. P. W. SHERWOOD 391

KALDOR, N. *Essays on Economic Stability & Growth* .. C. S. SOPER 392

KIMBLE, G. H. T. *Tropical Africa* .. .. H. C. BROOKFIELD 397

NATIONAL BUREAU OF ECONOMIC RESEARCH. *Demographic & Economic Change in Developed Countries* .. W. D. BORRIE 400

ROBINSON, JOAN. *Exercises in Economic Analysis.* G. C. HARCOURT 393

TURVEY, R. *Interest Rates & Asset Prices* .. .. C. P. BRAAE 399

WILSON, T. *Inflation* .. .. D. WHITEHEAD 392

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The Journal of the Canadian Political Science Association

Volume XXVII, Number 3 August 1961

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UNIVERSITY OF TORONTO PRESS
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The Economic Record

Vol. XXXVII September, 1961 No. 79

THE AUSTRALIAN ECONOMY, AUGUST, 1961

While there is ample scope for disagreement about the precise meaning of recent movements in particular statistical indicators, there can be no doubt about the basic trend of the economy during the greater part of the period since the last survey of the economy (Karmel, *Economic Record,* March, 1961). Partly for this reason, and partly because this is the season when Australian economists' thoughts lightly turn to prophecy, the recording element in this survey will be brief: attention will be focused on the central current problems of practical economic analysis—unemployment and the balance of payments. It will be concerned with the prospects before us rather than diagnosis of the recent past except in so far as diagnosis of the present state of the economy inevitably conditions assessment of likely trends in the future.

I.

It is for the last-mentioned reason that we start, apparently inconsistently, with a difference of opinion with one aspect of Karmel's analysis of the events preceding the period with which we are nominally concerned, namely his view that the boom of 1959-60 "statistically speaking, appears to have hardly got under way" or alternatively that the boom was "nipped in the bud".[1] While not denying that there is a case for such an evaluation of the boom there is also a strong case that it does it less than justice.

A boom which was sustained for at least eighteen months and was accompanied by a 35% increase in share prices (from June, 1959 to September, 1960), which found expression in the strongest burst of land speculation for decades, and which was associated with a deficit on current account in the balance of payments of about £400m., can hardly be called embryonic. Clearly speculation was rife. While it may not have carried the aggregate level of real activity to unduly high levels it certainly did so in particular sectors of the economy—notably in motor vehicles and in some branches of the building industry. Granted the prominence of these sectors in public discussion and the

[1] P. Karmel, *op. cit.,* p. 1 and p. 11.

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undoubted speculation, it is easy to understand why the Government did not regard the boom as a minor one. Its repeated attempts to curb it—by a progressive relaxation of import controls, by placing restraints on the increase of bank advances, by attempting (more or less successfully) to bring about a wage freeze and by a hesitantly surplus budget—seemed to bear a little fruit in checking its exuberance. Given the then outlook for the balance of payments the final bludgeon of the November 15 measures is understandable if not entirely excusable.

To establish that, in some sectors at least, the boom was a boom is important partly in the light of the hypothesis that "the bigger they are the harder they fall" (which is not to deny that without November 15 it might well have been a case of "bigger" and "harder"); and partly, at a more sophisticated level, in the belief that booms involve a whole net-work of inter-locking financial and other relationships. A sudden breaking of these—as at the end of 1960—is likely to have as a consequence a relatively long period before the interrelationships appropriate to a high rate of growth are once again firmly established. For this reason alone it is likely for instance, as will be argued in more detail below, that it will be quite a long time before the levels of *private* house and flat building approach the levels of the third quarter of 1960. The disruption of plans and expectations was not, however, limited to any one field.

Before leaving the subject of the boom one other observation is worth noting. Partly by virtue of hindsight and partly by the use of tools unfortunately not provided by the Commonwealth Statistician (seasonally adjusted series) it is now apparent that the boom was losing momentum before November 15. Retail sales, seasonally adjusted, had levelled out in the September quarter. Employment was growing at a slower rate from about June onwards. This slower rise was not accompanied by a rapid bidding up of wage rates. The rate of growth of building permits was slackening. Given sufficient reserves there seems little doubt that the gold-standard-like actions (paradoxically, interest rates excepted) of the Government in freeing imports and strengthening the credit squeeze would have had the desired results in due course. It was the apparent failure of these measures and the fear that reserves might be insufficient which made the situation appear untenable in November and precipitated the drastic actions of the middle of that month, some of the consequences of which provide the theme of this survey.

II.

As has already been indicated the background section of this survey will be brief. It is almost sufficient for our purposes to let a few key statistics speak for themselves:

RECENT ECONOMIC TRENDS

	Registered Unemployed*		Retail Sales† (Excluding Motor Vehicles, Petrol, etc.)		Merchandise Imports‡
	Actual '000	Seasonally Adjusted '000	Actual £m	Seasonally Adjusted £m	Actual £m
1960 Sept.	35·6	40·0	685·5	705	93·5
Dec.	53·6	56·4	784·9	709	93·6
1961 March	81·9	75·4	667·8	707	94·6
April	89·4	85·3			86·8
May	102·6	99·7			78·9
June	111·7	108·2	687·5	705	74·6
July	113·4	111·7			69·7

*Numbers registered with the Commonwealth Employment Service as applicants for employment. Source: Department of Labour and National Service. Monthly Press Release.

†Quarterly.

‡Quarterly at monthly rates to March, 1961.

These indicate fairly clearly the course of the recession to the time when this is being written.

In addition, a short catalogue should be made of the more important policy decisions which have been made since the last survey. Of these the earliest was the decision, at the end of April, to buttress international reserves and quell possible speculation against the reimposition of import controls by raising an I.M.F. loan of £78m. and arranging a stand-by credit of a further £45m., available if necessary over the next twelve months. Shortly afterwards, on May 10, came the dismantling of the last of the November 15, 1960 measures which was still operative: namely the limitation on the tax deductibility of interest payments. This, it was announced, with the exception of convertible notes to which it would continue to apply, would cease with the end of the financial year 1960-1961. Still later in May came the first positive measures to halt the decline in one of the worst hit sectors, namely housing. These took the form of a release of funds by the Commonwealth Savings Bank and the removal of the waiting period for applicants to War Service Home loans. The middle of June saw the first relaxation of the credit squeeze as governed by controls over bank advances and slightly increased levels of planned public works expenditure as a result of the annual Loan Council Meeting at which Governmental loan allocations were raised from £230m. in 1960-1961 to £240m. in 1961-1962 and the permitted limits for Semi and Local Governmental loan raisings were lifted from £106m. to £111m. While not a policy decision of the Commonwealth Government, the Basic Wage decision of early July, which raised the basic wage by 12/- per week, should also be noted at this point.

It would be too disconcerting to try to summarise the trend of

Ministerial pronouncements on the course of the recession and its likely future developments during this period. It is sufficient merely to note that there was a number of statements in June and July that the down-turn in activity was greater than had either been intended or anticipated, in which case there was surprisingly little activity in attempting to remedy the situation in the pre-Budget months. Reflection on the above statistics (which give some of the benefit of hindsight) and on the nature of the announced policy changes, up to but not including the Budget, would suggest that positive action to slow down and halt the recession was both too little and too late. By the end of June, with imports clearly falling and likely to fall still further for at least some months to come and with the trends of domestic output and employment still downwards, the relaxation of credit could have been considerably more vigorous than it apparently was. The only really positive measure at this time appears to have been a request that the States increase their rates of public works expenditure significantly faster in the first half of the financial year but there has been no official recognition that a cut-back of these increased rates is now virtually impossible and that the Loan Council decisions of June have already, de facto, been discarded. The consequences of this inaction and reluctance to admit mistakes seem to be not only a higher level of unemployment, and its unnecessarily long duration at this level, but also a much slower process of recovery and general economic growth than would otherwise have been the case.

III.

It is against this sketchy background of recent events that we now propose to examine the prospects for the current financial year.

Investment Prospects

(a) *Housing:* The house and flat building industry was one of the sections of the economy against which the November 15 measures were inevitably directed. Their efficiency in achieving results was probably surprising even to their originators. For this a variety of reasons is probably responsible, two of the most important of which are likely to have been: first, the fact that 1960 levels of activity were clearly in excess of any reasonable estimate of currently accruing demand; and secondly, the disruption of the network of speculative financial institutions which had developed during the course of the boom. The corollary of this view is that the process of re-establishing a high level of activity in *private* house and flat building is likely to be long drawn out. The period is still too short for there to be time for clear confirmation of this view. All that can really be said at the moment is that the most recent data confirm it, as is indicated in the following table.

HOUSES AND FLATS

Quarter or Month Ending	Commencements		Building Approvals			
	Actual	Seasonally Adjusted	Actual	Per cent of Previous Year	Actual	Per cent of Previous Year
			Private		*Total*	
	'000	'000	'000	%	'000	%
1960 March	22·6	23·1	22·8	134	25·8	132
June	25·0	24·9	25·1	129	28·0	117
Sept.	25·6	24·7	25·7	118	29·2	118
Dec.	23·9	24·3	20·9	98	25·9	102
1961 Jan.			4·8	83	5·6	85
Feb.			5·1	70	6·0	71
March	20·1	20·6	5·1	52	6·3	59
April			4·6	62	5·4	67
May			5·9	61	7·2	69
June	19·1	19·0	5·4	65	8·1	84

If the building permit figures may be trusted, the May measures to promote recovery in housing have, so far, merely been successful in halting the decline in *private* house building. Such increase in activity as has occurred would appear to be the result, primarily, of governmental building. Here it is also worth noting that the June rate of issue of government building permits was at an annual rate of £95m. per annum whereas available finance (Loan Agreement and War Service Homes) is about £80m. To the extent that permit data foreshadow actual spending rates the implications are either that governmental spending will have to fall or, more probable, that Loan Council decisions will have to be revised. In the sphere of private building, availability of finance—through building societies, savings banks, and trading banks—will no longer be a limiting factor. It is by no means clear, however, to what extent housing demand is a function of the availability of finance. With the developers and home-unit builders licking their wounds and with income prospects hazy for large numbers of people, a strong revival of private house and flat building is, to say the least, not a likely prospect. Unless there is still greater expenditure of public money than that already proposed it is difficult to see more than 80,000 houses and flat being built in 1961-2, a figure it must be remembered which should be compared with a peak annual rate of 100,000 units in 1960.

(b) *Other Buildings:* In this field forecasting savours more of prophecy. The lags between the decision to build and the digging of the first sod are such that the consequences of November 15 have barely had sufficient time to be reflected in the statistics of permits and commencements. Given that this is the case the slight downward trends that are already evident are not favourable omens for a continued high level of activity throughout the financial year 1961-62.

OTHER BUILDINGS

Quarter Ending	*Value of Commencements*		*Building Permits*	
	Actual	Seasonally Adjusted	Actual	Percent of Previous Year
	£m	£m	£m	%
31 March 1960	56·5	57·8	41·1	114
30 June	63·3	60·4	56·8	114
30 September	67·0	61·2	64·7	132
31 December	68·0	78·7	63·5	113
31 March 1961	57·9	59·1	42·6	104
30 June			52·4	92

While the depth of the recession and its likely duration are still somewhat in doubt, they are unlikely to be such as to involve the complete scrapping of decisions to build. There are, however, quite good a priori grounds for expecting the deferment of decisions to build factories, offices, shops, hotels and other buildings. Such deferments will not yet have had time to be reflected in the actual levels of activity in building and construction but could easily make themselves evident in the second half of the current financial year. At the very least, prophecy should take the form that there is unlikely to be any increase in the rate of spending in this sector during the current financial year.

(c) *Plant and Equipment:* Once again reliance must be put on straws in the wind and a priori judgments. The most substantial straws are the drop in factory building commencements from £18·9m. in the December, 1960 quarter to £12m. in the March 1961 quarter and the fall in the monthly rate of "machinery" imports from £13·4m. in January, 1961 to £10·1m. in June, 1961.[2] Neither of these movements is unambiguous. Reliance must chiefly be placed on the fact that currently there is a good deal of under-utilisation of existing factory capacity and that this may be expected to continue for at least some months. In these circumstances one would not expect much of a rate of growth in the installation of new capacity and in re-equipment. Further, such large-scale factory projects as have been announced in recent months—notably by Ford and the various aluminium companies—are not likely to have much effect on rates of expenditure on equipment until late in the current financial year.

(d) *Motor Vehicles:* It is extremely difficult to forecast with confidence in the case of motor vehicles. Seasonally adjusted, the monthly data show no clear trend from January to June, fluctuations occurring in such a way as to indicate annual new registrations of about 240,000.

[2] "Machinery" is here defined as Class XII (c) minus agricultural and household machinery, aircraft engines and tractors.

REGISTRATIONS OF NEW MOTOR VEHICLES

	Actual '000	Seasonally Adjusted '000
*September, 1960	27·6	26·7
*December	28·0	26·1
January, 1961	16·3	20·3
†February	17·0	18·9
†March	23·7	22·8
April	18·9	20·4
May	21·1	20·1
June	18·4	19·5
†July	17·4	17·1

* Quarters at monthly rates.
† Seasonal adjustment is not very satisfactory for motor vehicles on a monthly basis largely because of expectations of sales tax changes.

The July pre-budget expectational wobble of course gives no assistance to the forecaster. Two features of the pre-June results may however cast their shadows ahead. First the fall in demand has been concentrated on small vehicles, i.e. those other than Holdens and Falcons. Secondly, the fall has been largely in net new sales, the rate of "demolitions" (the difference between "new registrations" and changes in "vehicles on the register") has not varied significantly. If the first feature is a function of income changes then recovery might take the form of an increase in the demand for vehicles other than Holdens and Fords. The implication of the second is that recovery is unlikely to be aided much by deferred replacement demand. The writer's hunch—it can be no more than that—is that no rapid revival can be expected in the demand for motor vehicles. The implications of this for employment prospects are discouraging; for the demand for imports, encouraging.

(e) *Financing of Local and Semi-governmental Investment:* Cutting across this description by categories there is a financial point that is worth noting, namely, that the Loan Council targets for fund raising by local and semi-governmental authorities are permissive not guaranteed. As these institutions are likely to have difficulty raising finance the total increase in the Loan Council targets may be somewhat misleading. The expected financial difficulties arise from a number of sources: first, it is possible that the 20:10 ratio for investment in government securities by life offices and pension funds might operate to their disadvantage; secondly, another of their major sources of funds—the savings banks—are faced with at best a sluggish increase in deposits and strong pressure to put available funds into housing; thirdly, some of the authorities have quite large debt maturity problems; and finally, to the extent that the public utilities

amongst them have been relying substantially on "retained profits", the probably slow rate of growth of their sales over the next year may well mean that relatively less will be provided through this process. While it may no doubt be true that finance could be made available to them in one form or another outside their traditional sources of funds, doubts about obtaining it may well inhibit some of their investment plans.

Consumption

The following series record some aspects of consumer behaviour over the eighteen months to June last:

CONSUMPTION, DIS-SAVING AND EARNINGS

Retail Sales

	Actual	Seasonally Adjusted	Hire Purchase Changes in Advances Outstanding	Savings Banks Changes in Deposits	Average Weekly Earnings	Consumer Price Index	Real Average Weekly Earnings
		1	2	3	4	5	6
	£m	£m	£m	£m	1953-4 = 100	1952-3 = 100	March 1960 = 100
1960 March	645·4	682	20	10·9	135·5	119·0	100·0
June	682·8	699	15	2·3	138·5	121·1	100·5
September	685·5	705	30	34·7	138·4	122·5	99·9
December	784·9	709	9	—1·6	141·5	123·3	101·0
1961 March	667·8	707	—24	—21·4	141·4	124·2	100·0
June	687·5	705	—20	—21·6	141·2	125·0	99·1

Notes—

Column 1—Retail sales excluding motor vehicles, petrol, etc.
Column 3—Changes in deposits here exclude interest credited during the quarter and roughly estimated (at £5m. each twelve weeks) child endowment payments.
Column 4—*Monthly Employment Bulletin.* Index of Average Weekly Earnings. All industries. Seasonally adjusted.
Column 5—Consumer Price Index. All groups. Six capital cities.
Column 6—Column 4 divided by column 5 in terms of March, 1960, prices.

The main points to be noted are that retail sales (seasonally adjusted) levelled out about June, 1960. The reasons for this are not completely clear. It would appear that the declining rate of growth of employment and the slowing down of wage increases had a good deal to do with it. While too much should not be deduced from the arithmetic, it appears that real earnings stopped increasing in the June quarter of 1960 (column 6, above table). Since November high rates of repayment and limited new lending by hire purchase companies have meant the draining away of consumer purchasing power which is not, however, directly measured by the change in balances outstanding. Finally the levelling out in retail sales occurred despite

the largest dis-saving movement that has been seen amongst the savings banks for many years.

Since July the recent basic wage decision would have begun to exert its influence on consumer spending. Too much should not be expected of this alone. The maximum estimated amount involved is of the order of £60m. per annum, i.e., something less than 2% of total wage and salary incomes. Rumblings from the labour movement clearly indicate that a number of employers are attempting to absorb the increase in over-award payments. Not all the increase would necessarily be spent on consumption. What is probably more important, however, is that, since the award was made, unemployment has continued to increase as too has short-time working, while over-time earnings have continued to decline. The initial impact on consumer spending may well have been to level it out rather than to stimulate its growth.

Employment

Under the above conditions of investment and consumption the likelihood of any substantial reduction in the current high levels of unemployment is low. The best prospects are to be found in manufacturing, but there the process of working off stocks still has to be completed before much expansion can be expected. In building and construction, while unemployment may well have stopped increasing the outlook for a sharp rise in employment is not promising. In this situation the trade and service industries are not likely to be taking up much of the slack. In the slightly longer term there is the much discussed increase in the number of school leavers to be faced.

When manufacturing stocks are worked off there undoubtedly will be a rise in employment. It is doubtful, however, whether this alone will be sufficient to lift unemployment to an acceptable level. That it may be difficult to do this is indicated by an inspection of the following table which relates only to the male workforce. This shows

COMPONENTS OF MALE WORK FORCE AT 30 JUNE

	(000)				
	1958*	1959	1960	1961	1962
1. Rural Occupied	435·3	(435·0)	(435·0)	(435·0)	
2. Civil Employment	2097·9	2127·6	2187·7	2172·8	
3. All Defence	48·3	49·9	45·9	44·9	
4. Registered Unemployment	46·3	43·5	29·2	79·9	
5. Balance	436·0	462·1	482·5	517·8	
6. Total Work Force†	3063·8	3118·1	3180·3	3250·4	3292·9
7. Balance as % of Total Work Force	14·2	14·8	15·2	16·0	

*1958 figures taken from H. P. Brown, The Australian Male Work Force, *Economic Record*, April, 1959, p. 98, adjusted for the subsequent revision of the civil employment series.

†H. P. Brown, *op. cit.*, p. 93, adjusted for actual immigration since 1956-7. The estimate for June, 1962 is on the basis of nil immigration in 1961-2.

that growth such as occurred in 1958-9 was only sufficient to absorb an increase in the male workforce of about 55,000. To reduce male unemployment merely to 50,000 by June, 1962, assuming nil net male workforce immigration, will involve the absorption of some 72,000. It seems likely that something more than an inventory recovery will be needed to do this.

Demand for Imports and the Balance of Payments

The limiting factor which presumably was ultimately responsible for the November 15, 1960 measures was the level of overseas reserves and the then apparent demand for imports. That being so, it is essential to have a view about the expected demand for imports and of the likely general structure of the balance of payments before one can judge to what extent it is now safe to give new stimulus to the economy.

Before much can usefully be said about the demand for imports over the next twelve months an examination of the recent past is necessary. At least two major points should be made. First the import hump of 1959 to 1961 owed relatively little to the decision to relax import controls in February, 1960. Secondly, the positive side of the earlier proposition, this hump was to a very large extent a reflection of the rate of growth and the level of the investment boom of this period. This general view can be supported in the following way. Of the increase in imports between the average of 1957 to 1959 and the December quarter of 1960 (annual rates) from £800m. to £1,165m., at least half can be accounted for by a relatively small group of commodities or commodity groups, such as iron and steel, timber, motor vehicles, "industrial" plant and machinery and tractors. If this increase could have been avoided the remaining increase, i.e. to a rate of £970m., would undoubtedly have caused some distress amongst import-competing manufacturers but would not have had the crisis effects on the balance of payments that were produced by the combination of relaxation of import controls and investment-boom-derived imports.

When allowance is made for the cessation of this investment boom, the impact of the credit squeeze and the current lower levels of aggregate real income the short-term prospects for the level of imports are quite favourable. The following exercise in economic arithmetic may not be very far wide of the mark. For purposes of forecasting, imports have been divided into three groups: a fast growing one (in the period from 1957-9 to December, 1960) which includes iron and steel, timber, vehicles, tractors and paper as some of its more important components; oil; and the rest. In recent months the formerly fast growing imports have become the fast falling ones, oil has remained relatively stable while the rest, though falling, have not fallen very rapidly and already show signs of levelling out. If the recent trends in these movements continue until say September, then level out for a few months (not unlikely given the probable current behaviour of importers) and, finally, increase steadily until they reach an annual

rate of about £950m. in June, 1962, the resulting import bill for 1961-2 would be no greater than about £850m. As, on these assumptions, much the greater part of the fall occurs in more or less non-import-competing goods, it should be noted that this view implies a degree of import competition in the second half of 1961-2 which is not heartening in terms of employment prospects.

Having estimated the demand for imports in 1961-2 we can now proceed to look at the likely situation in the balance of payments. Our view is summarised in the following table:

BALANCE OF PAYMENTS 1960-1 AND 1961-2
(£m.)

	Actual 1960-1	Estimated 1961-2
Exports (f.o.b)	937	1000
Imports (f.o.b.)	—1084	—850
Net Invisibles	—257	—230
Balance on Current Account	—404	—80
Public Capital Inflow (including I.M.F.)	82	25
Private Capital Inflow (including balancing item)	361	200
Less Private Capital Outflow	—	—75
Net Capital Inflow	443	150
Change in International Reserves	+39	+70

Source—The Australian Balance of Payments: Preliminary Survey. No import valuation adjustment has been adopted.

Exports are calculated on the assumption that current estimates of output and price of wool would indicate export values comparable to 1959-60—i.e. about £50m. greater than 1960-61. Possible falls in wheat sales are assumed to be balanced by increases in all other exports —i.e. that the export drive, tax incentives and in particular a relatively stagnant domestic market will yield some results. Net invisibles are estimated on the assumption that recent ratios of invisibles to exports and imports remain much the same. Public capital inflow is an arbitrary figure. Private capital inflow is assumed to fall, partly because "permanent" inflow may well be less than 1960-1, and partly because deferred payments for 1960-1 imports are assumed to be of the order of £75m. If these various movements should be of the right order of magnitude then it might well be possible to repay the I.M.F. loan without reducing reserves below the level which has obtained for the last few years.

If this should be the likely prospect for the balance of payments

in 1961-2 then it should be obvious that there is scope for stimulating domestic expenditure without worrying too much about its effects on the balance of payments. This judgment, however, also depends partly on the balance of payments prospects for 1962-3. Here there are altogether too many unknowns for it to be advisable at this stage to attempt arithmetic comparable to that which has been suggested for 1961-2. It is nevertheless arguable that imports might not exceed £950m. to £1,000m. in 1962-3 even assuming a relatively fully employed domestic economy. Provided only that rates of growth of investment do not get out of hand—which, in terms of imports, means in particular that steel imports do not exceed £20m. (£55m. in 1960-1) and vehicles £60m. (£97m. in 1960-1), there is little reason to believe that total imports would be greater than the amount just indicated. This view is, of course, strengthened if, in addition, tariff adjustments may be assumed to have checked the excessive inflow of textiles, paper, etc.; if there are continued fruits of import replacement; and if the speculative importing pressures of 1960 are assumed to have worked themselves out. Assuming further no worsening of export prospects (the outcome of the Common Market negotiations may be one of the unknowns here) and no decline in the rate of capital imports of recent years, the balance of payments position in 1962-3 while tight need not be verging on crisis conditions. In which case advocacy of a stimulus to domestic spending in 1961-2, partly because of the relative ease in the balance of payments expected in that year, is not irresponsible, since we are taking into account the longer-term condition of the balance of payments.

IV.

It was against the background just described that the Budget for 1961-2 was presented on August 15. How did it measure up to the needs of the time?

Its net contribution in terms of the traditional presentation of the Budget accounts is indicated in the following table:

THE BUDGET 1961-1962

(£m.)

EXPENDITURE

	1960-1	Estimate 1961-2	Estimated Increase 1961-2
Consolidated Revenue Fund	1495·7	1613·9	118·2
Transactions Outside C.R.F.—			
State Works and Housing	230·0	240·0	10·0
War Service Land Settlement	2·0	2·3	0·3
Redemptions	79·1	79·0	—0·1
	311·1	321·3	10·2
TOTAL	1806·8	1935·2	128·4

REVENUE			
Consolidated Revenue Fund	1638·3	1697·2	58·9
Transactions Outside C.R.F.—			
Loan Raisings	144·6	165·0	20·4
Sinking Fund Increases	51·6	56·5	4·9
Other Balances	—11·9	—	—11·9
	184·3	221·5	37·2
TOTAL	1822·6	1918·7	96·1
SURPLUS			
Consolidated Revenue Fund	142·6	83·3	—59·3
Transactions Outside C.R.F.	—126·8	—99·8	27·0
CASH SURPLUS	15·8	—16·5	—32·3

Source: Adapted from data in the Budget Speech 1961-1962.

This presentation in itself is not very meaningful. It is preferable to try to convert the budget expenditure estimates into national income account terms. This necessarily, given the data available to the outsider, must be done in a rough and ready fashion.[3] It is believed, however, that the following estimates should not be very wide of the mark.

OUTLAY OF COMMONWEALTH GOVERNMENT

(£m.)	1958-59	1959-60	1960-61	1961-62*
Net purchases of goods & services	402	433	437	459
Overseas gifts, relief, etc.	4	4	4	4
Cash Social Service Benefits	344	371	411	440
Capital Transfers	3	3	3	3
Interest Paid	23	26	23	26
Grants to State Governments	292	326	358	390
Net expenditure on A.C.T. & N.T.	20	22	24	25
TOTAL OUTLAY	1088	1185	1260	1347

* Estimated roughly on the basis of the 1961-62 Budget papers.
Source: 1958-9 to 1960-1 the *National Income and Expenditure 1960-1* White paper, Table IV, Appendix C.

It will be seen that the expected increase in Commonwealth outlays is likely to be of the order of £90m. which is no greater than those which occurred in the two preceding years. In the context of a year which is still in the process of recession such an increase would hardly seem adequate.

In our view the Budget has done very little to alter the trends estimated in the previous section. Some of its essential contribution—i.e. an increase in the rate of public authority spending—has already been made. This, however, has so far merely been sufficient to slow

[3] There seems to be no good reason why the Treasurer should not perform this task in the appendix to his Budget Speech and so help economists outside the Treasury to obtain a clearer view of the economic implications of the Budget.

down the rate of decline in general activity and in the rate of increase in unemployment. The contribution to consumer spending which is still to come does not seem sufficient to produce more than a sluggish growth in personal consumption, while its remaining increases in investment outlays are unlikely to outweigh the expected decline in private investment expenditures. In our view it should have contributed not less than £50m. and probably as much as £100m. more to the process of income generation if it was to have any hope of achieving a position of more or less full employment (say 50,000 employment applicants) by June, 1962.

There seem to be two basic reasons (in a budgetary context) for this failure of the Budget to meet its expressed major aim.[4] The first is a Micawberish view that something (a revival) is bound to turn up soon when most of the indicators are still pointing the other way. The economy will cure itself. The second is an, I hope, undue fear about the likely demand for imports.[5] Both of these diagnoses point in the same direction: that the government need do little and/or that, if it did, inflation and balance of payments crises would immediately rear their ugly heads. And so, quite logically granted these premises, came what the press immediately dubbed the "stand-still" budget.

One should not, however, praise its internal logic too much. Here its major weakness is that it accepted the view that consumption needed stimulation and also argued that the recession, like the boom, was sectional. Yet it only made one budgetary concession to the sectionally distorted consumer demand situation which it envisaged—namely the sales tax reduction on household furniture, appliances, etc. Housing (admittedly investment rather than consumption) gets virtually no budgetary assistance (other than that implied in Loan Council decisions already two months old); vehicles get no more mention than commendation of the act of faith by the Ford company; and textiles, in terms of their prospects, get no mention at all. In so far as the key to employment expansion lies in manufacturing the Budget makes very little immediate contribution to recovery and, unless the Minister for Trade takes up where the Treasurer left off, the Government may find the anticipated inventory revival much milder than it apparently expects.

Again, the purely token increase in unemployment benefits prompts the question: was not this Budget an occasion on which both economic expediency and common humanity pointed to the desirability of a really substantial increase in the rate of benefit? To double the rates, on the Budget assumptions about future unemployment, would

[4] Cf. The Budget Speech, 1961-2, p. i. "We put it (full employment) foremost now in our immediate economic plans".

[5] Cf. The Budget Speech, *op. cit.*, pp. 1-2. "While it would be optimistic and, indeed, unrealistic to expect the rate of imports to continue at the low levels of June and July, they were running, in those two months, at no more than £865 million a year". Contrast our view (Section III above) that imports are unlikely to *exceed* £850 million in 1961-2.

only have involved additional expenditure of £6m. If, nowadays, economic policy does require occasionally, as it probably does, some short-term unemployment, it is by no means necessary that the hostages to fortune (the unemployed) should suffer for the common good in the way which is implied in the (proposed) unemployment benefits. Advantage would also be taken of the built-in stabilising effects inherent in relatively high unemployment benefits. Within limits (not exceeded by what has been suggested here) the higher the rate of benefit, the shorter the probable period for which it has to be paid to relatively large numbers.

V.

What is depressing about recent government economic policy is not only the inadequacies of its short term policies but also its failure to recognise the real need for a long term one. Not only have we seen fiscal policy taking the form of $\pm 0{\cdot}86\%$ deviations from budgetary balance and apparently being expected to check the exuberance of a boom and to give vitality to an economy in the course of recession; not only has flexibility in interest rate policy been conspicuous by its absence; but also there has been no long-term policy other than the lip service to "a farther view" in the latest Budget Speech.

In a situation where, as has long been recognised, balance of payments crises are endemic when the economy approaches full employment levels, concern only for the short-term is, to say the least, short-sighted—if only because such policies exacerbate the short-term difficulties towards which they are directed. Thus by cutting off the boom in too drastic a fashion the recession has been made much deeper than it need have been. More important, if the Government had been prepared not only to take a long term view, but also to do some detailed, rigorous and careful thinking about the desirable rates of growth of investment and of the composition of that investment, the misallocation of resources in 1960—for instance, too much investment in housing and vehicles—may have been avoided and with it the drain on overseas balances that was one of the consequences of the investment boom. Likewise it would not now be making desperate efforts to revive housing and turning a blind eye to the plight of the vehicles industry. Again the miserable performance of the steel industry in 1960—miserable, in terms of its effects on the balance of payments—could well have been avoided and its present prospects as an export earner much enhanced.

If the Australian economy has in the recent past been plagued by structural distortions it is not sufficient merely to give a nudge by relaxing import controls. Direction and guidance should also be given on the pattern of investment which is required by the new circumstances. It could also well be the case, despite the Treasurer's not very well thought out plea to the contrary, that our current long-term

immigration is no longer appropriate. Certainly no sanctity should be attached to a particular rate. One which may well have been appropriate given the age-distorted population structure of the 1950's could well not be so now that this situation no longer has comparable effects on the growth of the workforce.

In short, the major problems now facing the economy are really long-term ones. What is the desirable rate of growth? What is the level and composition of the investment needed to create that growth? What shifts in resources are necessary to bring the balance of payments into reasonable equilibrium? What is the appropriate rate of immigration in these circumstances? If only we had evidence that these were the questions with which Government economic policy was deeply concerned we could easily pass over its short-term mis-judgments. It is the lack of evidence that those concerned with day-to-day economic policy are giving serious consideration to long-term problems which is the really disturbing feature of recent economic events in Australia.

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THE SIGNIFICANCE OF RECENT DEVELOPMENTS IN ASIA FOR THE ECONOMIC FUTURE OF AUSTRALIA*

I am not too sure that the proposers of this topic, or I, in accepting it, knew exactly what it meant. In the address as I have finally composed it, it has become rather a mixture of musings and speculations of a kind which might be expected of one in transition from official to academic life.

On the one hand, I have limited my observations pretty much to Asian developments whose significance for Australia's economic future is likely to be reflected in, or operate through, one or other element in our balance of payments. This is natural for a former Secretary, Department of Trade.

On the other hand, as a newcomer to the academic field, I will be disappointed if I fail to paint a reasonably convincing picture of the great scope there is for economists and social scientists interested in empirical and theoretical studies of Pacific and Asian economies. The picture I paint will be impressionistic only. It can hardly be otherwise when dealing with a region so diverse and complex in economic characteristics and so little lending itself to precise observations of the present or confident forecasts of the total situation in the future.

I.

Since Australia's economic future is the central question at issue we may begin by asking whether there is any element of necessity in our economic relations with Asia. In one sense, an easy answer, "yes", is possible. Thus, 24·5% of our exports by value now go to Asian markets[1] compared with the pre-war figure of 9%. We draw about 16% of our import supplies from these same countries—the same percentage as pre-war but from a lower post-war figure showing a steady upward trend in recent years, especially from Japan.

We clearly have an economic relationship of some substance, one in which the trend is upward. We are, however, concerned with the future. Will the trend continue and is it imperative that it should? I believe the answer is again "yes". Nevertheless the variables which must be assessed in arriving at any answer are so "ify" in character that others may feel entitled to suggest that we do not have to worry too much about expansion of our Asian markets.

* I am greatly indebted to Mr. R. K. Hefford, Research Assistant in my Department, for a great deal of material (statistical and other) without which I could not have attempted this address. I do not blame him in any way for the conclusions I have drawn from this material.

[1] Asian countries from Pakistan to China and Japan, including Philippines, Indonesia, Formosa, various near Asian islands, excluding N.Z., New Guinea and the other Pacific islands.

The difficulties confronting us in reaching a firm conclusion arise not only from the extremely conjectural nature of any interpretation of Asian events, but also from the considerable problems met in projecting our own economic needs forward a decade.

Let me look at our end of the problem first. In recent years we have met with growing difficulty in holding, let alone expanding, our markets in U.K. and Europe. The nature of exports and the nature of trade barriers and competition met in Europe and also in North America are such that we have been under some compulsion to expand elsewhere. I cannot here expound on this, but it is an important part of the background to other judgments I offer in this address. The main facts can be seen in the Appendices, showing changes in the direction of our trade, prepared for me by Mr. Hefford. Altogether, it has been fortunate that some success has attended our efforts in Asia and the Pacific.[2] Before turning to the far more debatable question of whether this past compulsion will continue with us in the next ten years, let me observe that this success has not been won without political difficulties and perhaps some economic loss for particular enterprises. The Trade Treaty with Japan has certainly resulted in a measure of import competition not always comfortable to handle politically. Very few now doubt that it has been a necessary part of the trade expansion we have enjoyed. One of the few judgments I can confidently make in this address is that our dependence on the Japanese market will grow rather than diminish.

Now let us look at the requirements of the Australian economy in ten years' time. We will assume continued growth in Gross National Product at 4% or 5% per annum from £7,350m. assumed for 1960-61, full employment, an addition of some 2½ million to our population, and the same high rate of investment which has characterised the last ten years—at 25% of G.N.P. Some of these items affect particularly the composition of our imports, but let us assume that were 1960-61 "normal" in a trading sense the imports this year would be £1,000 m. and not £1,100m. as they are likely to be.[3] What can we say about imports and exports in 1970-71 under these conditions? It appears we can say almost anything, making a selection to suit a mood of willingness to "go out and get markets" or a contrasting and much easier passive course. On the one hand, given a highly favourable set of conditions, we may need only to increase exports from an actual £900m. this year to a mere £1,000m. in 1970-71. On the other, a case can be made—albeit a pessimistic one—for the view that by 1970-71, we will need to earn by export as much as £1,900m.

[2] N.Z. and Pacific Islands are a significant addition to what has been said about Asian markets. Exports to N.Z. and the Pacific Islands have risen from 6·2% of exports by value in 1937-38 to 9·2% in 1959-60, while imports have declined from 4·6% by value in 1937-38 to 3·3% in 1959-60. Total exports to the Asian and South-western Pacific region have therefore risen from 15·2% pre-war to approximately 33·7%.

[3] A judgment made long before I received the comfort of Professor Karmel's analysis—*Economic Record*, March, 1961, p. 12.

Appendix II sets out this wild array of possibilities which are derived by adding to the assumptions already made the following:

(a) *Imports:*

(i) will vary proportionately with G.N.P. at 13·6%; or

(ii) will decline relatively to G.N.P. on average by ½% per annum—reflecting a substantial relative import saving of 5% by 1970-71; or

(iii) will decline relatively to G.N.P. by ¼% per annum—i.e., by 2½% at the end of ten years.

(b) *Net Invisibles:*

Vary with imports at 24·5%

(c) *Net Capital Inflow:*

(i) will be £250m. in 1970-71.

(ii) because of mounting obligations in the reverse direction including a substantial addition to foreign aid programmes will drop to £150m. [This point is consistent with the view I take later in this address]

If we take a combination (a) (iii), (b) and (c) (ii) we get the following picture for 1965-66 and 1970-71.

	£A million			
	(a) G.N.P. Rising 4% p.a.		(b) G.N.P. Rising 5% p.a.	
	1965-66	1970-71	1965-66	1970-71
Exports*	1174	1354	1242	1505
Imports	—1104	—1208	—1158	—1329
Trade Balance	120	146	84	176
Net Invisibles	— 270	— 296	— 284	— 326
Current A/c. Balance	— 200	— 150	— 200	— 150
Net Capital Inflow	+ 200**	+ 150	+ 200**	+ 150

* Calculated as the residual necessary to avoid movement in reserves.

** For 1965-66 I have shown capital inflow at £200m.—merely to suggest a gradual development of larger reverse flows.

The net capital inflow assumed is quite substantial. To assume a net relative import replacement (i.e., fall in average propensity to import) to me implies continued industrial expansion somewhat on the pattern of the last ten years. In that decade there were special factors at work—solid migration, rising capital inflow and for other reasons import licensing. The last factor no longer operates and may affect the investment climate. There must be confidence on the part of investors for, if we do not have further industrialisation on a large scale, full employment may not be assured for the assumed population growth.

In this event, the G.N.P. may be less than assumed and the consequential growth in import and export requirements also less.

Given present determination to avoid import licensing or any equivalent curb on imports, it may require a measure of faith to assume for the next decade the requisite growth in industrial production on the one hand, and freedom from external (balance of payments) difficulties on the other. Discovery of oil could reduce our import bill. However achieved, it is clear from the tables in Appendix II that full employment for a population of 12½ million will call for a continuation of a large net capital inflow or a large expansion in export earnings unless a quite substantial fall occurs in the ratio of imports to Gross National Product.

On the assumptions selected, export earnings required could be from £400m. to £600m. more than now. Some of this may come from improved export prices relatively to import prices—that is from some up-trend in terms of trade. But at constant prices this is an increase in volume of 45% to 66⅔% over 1960-61. It is interesting to note that the increase in volume in the decade 1950-51 to 1960-61, was 70%. Unfortunately, of course, a good deal of this was lost in "power to import" terms because of the adverse trend in terms of trade.

With this heroic task conjured up for us, let me now turn to the economic prospect ahead in Asia.

II.

There are five major characteristics of Asia today which, for purposes of my paper, are the most important. They can be quite briefly stated.

The first is the existence of a massive population problem. At the present time world population is estimated to be three thousand million or three billion American style. Of this number just under 1·8 billion or 60% are in Asia. The present projection by U.N. authorities[4] is that, barring decimating wars, famines, pestilence and other disasters, 6 billion will be passed in the year 2000. Of this number Asia's share will be about 4 billion or two-thirds. This prospect certainly cannot be ignored in thinking about Australia's economic future even if, as I do today, we limit our immediate sights to the next ten years. In this period total world population may grow to 3·6 billion of which about 2·2 billion will be in Asia. This may sound more like the rumblings of an explosion rather than the explosion itself. Its realism is perhaps better conveyed by expressing the position in the E.C.A.F.E. region, including China, in terms of an annual increase in population of some 37 million.

The second fact is the incidence of economic poverty in relation to the population problem—in the sense that areas of largest populations tend to be poorest in terms of income per head. We do not need to worry unduly about the accuracy or feasibility of international income

[4] U.N. *Demographic Yearbook*, 1959.

comparisons to be reminded that the contrast of wealth and poverty is very great indeed if we compare Australia with India, Pakistan, Java, China. It is not improbable that in some years Australia's *addition* to per capita incomes is very nearly equal to the level of per capita incomes of great masses in India, Pakistan and China. There are some countries like Japan and Malaya who are well off relatively to other Asian countries, although a long way below Australia's economic standards.

The third fact of importance is that a great many of the countries with which we are concerned have recently changed from colonial states to independent powers. I need only mention names to remind you: India, Pakistan, Burma, Ceylon, Indonesia, Malaya, the former French-Indo-China States. China requires separate mention since, whatever may be the correct word for its pre-war status, its present status as a formidable Communist power is a major factor in the present and future situation.

The fourth characteristic is one which China shares with most of the national members of the region—a determination, varying in fierceness of resolve, to develop economically. Most of the new nations are well aware that economic viability is not an automatic fruit of political independence. For several countries it is true that "the only thing which is crystal clear is the dominance of national feeling over economic calculation."[5] This has been readily apparent, for example, in Indonesia. It frequently appears in the policies of Asian countries vis-à-vis western economic aid and private investment.

The fifth factor is derived from the first four: there is a wide variation in degree of political experience, in political systems and in levels of economic welfare. I stress this obvious fact for a good reason. Much that is relevant to Australia's economic future can be said in general terms about the first and second facts—population growth and low incomes. Thus we can say something useful about the probability that Asian development will stimulate growth in international trade. Nevertheless, the real significance for Australia is better assessed by breaking down this aggregative approach into a consideration of some of the national units. In this way, it will quickly be found that for Australia the significance of social, economic and political events in India, China, Japan and Indonesia will differ markedly in all four cases.

I propose both to make some general observations and to comment briefly on these four countries. Before doing so, however, I find it necessary to take a step which may well sound like an unjustified dismissal of more than half the problems ahead of us. I have been asked to discuss the significance of recent developments in Asia for the economic future of Australia. In the last few minutes I have really stressed the enormous problems of population growth and poverty

[5] Professor W. K. Hancock, in writing in 1937 of the conflict between Arabs and Jews, in *Survey of British Commonwealth Affairs*, I, 1937, p. 465.

which most Asian countries are trying to solve, under one political system or another, by promoting economic development.

No one can take a complacent view of this task—even in the next ten years. I believe there are great forces of social and political inertia, both in national and international terms, which make it difficult to assume that economic development will keep pace, let alone more than keep pace, with population growth. Nevertheless, it is hardly worth proceeding unless I assume that degree of success which will keep the region free from major wars and natural disasters—insofar as poverty and starvation may be the causes of war and other disasters. It is, of course, necessary also to assume that there will be freedom from war and disaster possibly arising from outside Asia itself but on a scale likely to engulf large parts of the world.

In short, I feel entitled to assume that the economic behaviour of nations in the region will, over the next ten years, be that predictable from the present pattern.

The main burden of my remarks will be directed towards indicating the kind of trading structure Australia may expect if the recent impetus to economic development is sustained. My conclusions could be badly affected if great political changes occur. Certainly much depends upon what sort of political expression is given to the "revolution of rising expectations". As Myint[6] has said: "It would be a crowning point of irony if some backward countries were to turn towards Communism through an excessive fondness for the American and British ways of life". This certainly could happen. However, my conclusions today exclude any major swing to Communism, by either India or Japan. In economic terms only, a change by Indonesia might be less consequential.

What then do I assume? I assume that national units in the area will be able to take the domestic measures necessary to promote the growth of the national incomes. These internal measures are outside the scope of this address. I then proceed to argue that international economic relations will develop further in the manner inherent in recent trends. It will be apparent from what I now go on to say, that I include as a necessary ingredient of these international economic relations rather more than trade. To me there is no escape from measures of international aid directed to ensuring that economic development will proceed more surely and faster than could be managed in terms of some concept of normal exchange of exports for imports, accompanied by a limited flow of private capital.

In this way I can try to make some sense of the subject before us. Certainly I see little point in discussing Australia's economic future in relation to any situation of complete failure to meet the challenge of population and poverty in Asia. Even a mild measure of success such as an increase in national incomes in Asia by little more than

[6] H. Myint: "An Interpretation of Economic Backwardness", *Oxford Economic Papers*, June, 1954, p. 152.

population growth will call for international policies of trade and aid not yet adequately evident. But let us now turn to these matters.

III.

If, as I have already suggested, Australia will be dependent upon the Asian regions for a substantial increase in export markets, it is of some importance to consider whether the imports of the region are likely to increase.

We can begin with one comforting fact: trade in the region has increased although some of it has been in the form of aid goods (e.g., wheat supplies) or finance to support specified capital imports or balance of payments deficits.

Imports by Asian countries are the central point of interest for Australia's export prospects. Taking total imports into E.C.A.F.E. countries, both the value and volume of *imports* have increased since pre-war and during the post-war period. Since 1953, the annual compound percentage increase up to 1960 has averaged about 5½ to 6% both for value and volume. With Japan excluded, the figures are, however, only 3·1% for imports—an indication of the very much faster rate of growth in Japan's trade. Excluding Japan, too, it is worth noting that in *absolute* terms, imports into E.C.A.F.E. countries as a group consistently exceed their exports, indicating the importance to them of foreign exchange support through reserves and capital inflow including *aid*. This has important implications for Australia as we shall see.

The region's share of world trade has declined sharply both in exports and imports since pre-war, but during the post-war years the decline has been very little. Again, however, if Japan is excluded the position is less favourable: the decline for the rest of the region has continued during the post-war years. This is simply part of the world phenomenon frequently noted: trade among industrial countries has advanced considerably more than trade between industrial and non-industrial countries.

If imports into E.C.A.F.E. countries including Japan continue to rise at 5%, Australia's exports could grow from £236m. in 1959-60 to about £385m. in 1970 even if her share in regional imports does not rise above the present approximate 4%. This would be a help but not a full answer to the possible problem of finding £400m. or more by way of additional exports. Moreover the method is too crude even for a policy maker. Before deciding whether we can accept this result or raise the prospect to more cheerful heights we need to ask whether there is any general reason for expecting regional trade to increase significantly.

I have been re-reading Robertson, Keynes and Viner[7] and others

[7] Addresses by D. H. Robertson and J. Viner reproduced in *Readings in The Theory of International Trade*, 1949. (Ellis and Metzler, Editors). For Keynes, see *Yale Review*, Vol. 22, 1932-33.

on the prospect for world trade as the first two saw it before the war and as Viner saw it in 1946. You will recall that Robertson and Keynes feared that differences in comparative advantages for industrial production were narrowing and that this would reduce trade. Keynes in 1933 had expressed the view that "most modern processes of mass production can be performed in most countries and climates with equal efficiency". Viner, in 1946, was not convinced and the last 15 years have borne him out. Trade has grown greatly and most significantly among industrial countries whose capital goods have been in demand by underdeveloped countries too.

In pre-war days underdeveloped countries were not much in the news and writers about trade did not pay them much attention. Robertson, indeed, and not he alone, spoke of the "flight of the Malthusian devil". Not only did population stability seem in sight but the New World was demonstrating a new level of agricultural efficiency—a factor thought likely to encourage trade with Europe. Unfortunately, the war encouraged Europe to develop her own agriculture to our post-war trading disadvantage. On the other hand, the Malthusian devil landed in Asia, but it is not so certain that our ability to supply increased quantities of food will be the means of putting the devil to flight again. For here it seems there can be no straightforward pattern of commercial trade with Asia.

Perhaps I ought not to be raking over old writings so much. Yet I am satisfied to accept one conclusion of Viner's which seems to me to be supported by the facts and common sense. Rightly accusing Robertson and Keynes of getting trade relatively to national income mixed up with absolute levels of trade, he concluded: "While it is by no means certain, therefore, that growth of per capita wealth tends to lessen even the *relative* importance of foreign trade, there is no reason whatsoever for questioning that it operates to increase its *absolute* importance". In short, Asia's imports may or may not fall relatively to national incomes as they grow; but the level of imports is likely to grow absolutely.

The facts of recent growth in trade, already quoted, give support to this view. If we turn to common sense, it seems evident that no country in Asia is so blessed with resources and so assured in its growth that it can ignore trade as a factor in development. Japan clearly needs foodstuffs and a wide range of raw materials. She must live by trade. China and India have a relatively low ratio of trade to national income. Both are likely to become very largely self-sufficient in time; yet in the "interim", especially while grappling with an explosive population problem and the greatly difficult task of raising agricultural productivity as well as industrialising, both have import needs. The needs range over the whole gamut of imports from foodstuffs, raw materials, industrial components and capital goods. By the "interim" I certainly mean the next decade and I suspect longer.

We know least about China, but I really doubt whether she is any exception to certain general propositions which seem to be valid, judg-

ing from recent experience in Asia. With Lewis[8] and Nurkse[9] and the great host of other writers on the subject of development in backward countries, we may assume:

(1) An effort to promote agricultural productivity since, without this, a rising number and proportion of people in non-agricultural sectors cannot be supported; unless of course, commercial imports or aid fill the gap.

(2) During this process and the concurrent but also difficult process of industrialisation, imports will be looked to as a source of foodstuffs, capital equipment, components and raw materials which cannot yet, or, in some cases, may never, be produced domestically.

(3) To finance the import programme, exports will be encouraged.

(4) These exports are likely to be the traditional exports of foodstuffs or raw materials or simple labour-intensive manufactures.

(5) Since the marketing of both these classes of exports meets with difficult barriers to trade and often, too, with violent fluctuations in prices, the demand for imports and freights, etc., will frequently and probably mostly exceed export earnings. (We have already noted this as a fact for the E.C.A.F.E. area as a whole.) This leads to falling reserves, necessary restrictions on imports, so emphasizing preference for essential "development" goods and to calls for aid in one form or another.

(6) Even if aid were not necessary for the reasons given, many countries will look for it—provided they can handle the political aspects of it—as a means of speeding up development beyond the limits set by a normal growth in trade.

IV.

All these elements exist in Asia and all have certain implications for Australia which may now be briefly indicated. The first relates to food. It is probable that Japan, for example, will be able to pay her way. But we may expect that India—a clear case of continuing balance of payments difficulties—will continue to look to surplus disposals from North America and, dare I say it, from Australia? I will return to India's food problem later as also to China. I want merely to note here that our export trade in grain is certainly likely to have an element of the non-commercial in it.

Whether we can share in the growing demand for capital goods and raw materials is largely up to us. The case of Japan again is fairly clear as we shall see. For the rest, it is far from clear yet that we will overcome our inhibitions and competitive disadvantages in developing Asia as a market for our capital goods and component industries. I believe we have certain advantages especially if we develop capital

[8] W. A. Lewis: *The Theory of Economic Growth*, 1955.

[9] R. Nurkse: *Patterns of Trade and Development*, Wicksell Lectures for 1959, and *Problems of Capital Formation in Underdeveloped Countries*, 1958.

intensive industries based on our favourable supply of indigenous raw materials. Certainly I would not expect the burden of export growth in relation to Asia to be borne successfully by agricultural and pastoral products alone—even if China does offer a substantial opening from time to time.

Two further implications are more difficult and yet, I believe, inescapable. I have said that developing countries face difficulties in disposing of export produce. Insofar as these difficulties relate to agricultural and mineral produce, Australia understands and shares them. However, we are on the receiving end of the so-called low cost manufactures problem, especially in textiles. Japan has been our traditional *bête noir* in this respect. Her cost structure is now much more nearly western than it was pre-war. In future our greater worries may well come from Hong Kong and China and maybe India. Our record for sharing our own *growth* with low cost suppliers is not the worst in the world: Europe, excluding Britain whose record is much more liberal, remains the most stubborn. And yet, if the West will not provide some solution by adjusting commercial policy in favour of these exports, Asian countries especially are going to face added difficulties. Increased capital aid may soften the blow, but we must not complain if Asia tries to force the pace of import-saving as a counter to our reluctance to accept the simple manufactures appropriate to labour intensive industries.

Finally, the question of aid in all its forms is a growing one. There is nothing sacrosanct about the idea of contributing 1% of national income—itself less than annual growth in most western countries. Yet as various investigators point out, private capital is not flowing at the pre-war levels and certainly not adequately to the underdeveloped countries. They probably could do more than many do to attract private investment. Nevertheless, we may as well accept as inevitable wide intervention of Government in economic life in these countries. This fact may limit the scope for private capital to flow as it does between advanced countries.

Most investigators recognize this position and most, including Paul Hoffman, Managing Director of the U.N. Special Fund, put aid requirements at between ½ and 1% of the national incomes of advanced economies, including Australia. It would be interesting to see an analysis of his estimates for the next decade.[10] For underdeveloped countries generally he projects export earnings of $378 billion, import needs at $440 billion, making a deficit of $62 billion to which he adds $8 billion for freight and debt service. Present aid and investment equals $4 billion per annum, leaving another $3 billion to be found, of which he expects $2 billion to be aid in the form of grants or soft loans.

I cite this in illustration of the acceptance of the need for assistance, not in proof. The need, if not its measurement, seems reasonably

[10] P. Hoffman: "Should We Reassess our Foreign Aid Program", *Annals of the American Academy of Political and Social Science*, Vol. 330, July, 1960.

to be inferred from the six propositions I stated. There is great scope for empirical research here. Meanwhile, current estimates of the need —Hoffman's is fairly modest—are beyond the level of Australia's present efforts. Our present contribution, including New Guinea (and this is right and proper), is about 0·35% of our current national income level.[11]

If the views I have stated about the external aspects of Asia's economic development problems are correct and if Hoffman and others are near the mark in their assessments, we must expect either on our own initiative or under pressure to have to raise this percentage. It is highly probable that New Guinea alone will call for considerably more aid. It was in the belief that we would be faced with the call and would respond to it, that I allowed in my opening projections for a considerable decline in *net* capital inflow into Australia.

If we do participate in increased aid to underdeveloped areas it will be for many reasons of foreign policy, beyond my scope for discussion today. Nevertheless, it is fair to state that trade and aid policies which do effectively contribute to economic growth in Asia offer some chance that political stability, economic wellbeing and peace will thereby be promoted. If economic growth does not occur—even if only in part due to lack of adequate international economic policy—the chances of a peaceful and effective economic growth for Australia will certainly be less. I think this view is reinforced if we look separately at India, China, Japan and Indonesia.

V.

Given the confines of this address, to attempt any comment at all on *India* is perhaps foolhardy. Yet India well illustrates some of the general points I have been making. It is a country with over 400 million people, an annual increase of up to 10 million, an apparently modest aim of increasing its total national income by 5% per annum, with per capita incomes (now about £A25 on average, if properly measurable) increasing perhaps by one or two per cent a year at best.

From the experience of two Plans and the statement of the Third certain points seem quite clear:

1. Regardless of the hopes and not unreasonable expectation that India will ultimately be classified as a relatively self-sufficient nation, she cannot lift herself by her own bootstraps. She is significantly dependent on imports of food, raw materials (e.g., chemicals for fertilisers), capital goods and components and technical assistance.
2. Export earnings have not been and are not likely to be adequate for some time to come as a source of financing imports. Tea, jute and jute goods and cotton textiles do not offer exciting prospects as exports. These are the staples. Reserves have been run down continuously, saved from complete exhaustion

[11] From unpublished work of Mr. R. K. Hefford.

only by foreign aid which covered about 20% of imports in the first three years of Second Plan, 1956/57-1958/59.[12] Imports are quite severely restricted, perhaps affecting development directly, but certainly making for domestic inflationary problems and restrictions on export supplies.

3. The battle of raising agricultural productivity has not been won. It is hoped to win it in the Third Plan but it may be a little unreal to anticipate the end of all grain imports by 1965. The Third Plan aims to raise food grain production from 73·5m. tons in 1958-59 to 100m. tons in 1965-66. This would enable food supplies not merely to match population growth but would also allow an increase in calory supply and some change from poorer to superior type grains—e.g., from millet to rice, wheat and maize.

This question of food imports is worth a further word. India has long been regarded as a proper commercial market for Australian wheat. In the post-war period it took on average (very much up and down) close to 1 million tons. At the moment our commercial market has a ceiling set by agreement with U.S., India and Canada at 400,000 tons. Yet imports of grain may now exceed 4 million tons—all but 400,000 tons being P.L. 480 disposals.

It is worth stressing that P.L. 480 wheat has, over the period 1954-59, accounted for about 50 calories of the average daily diet of about 1,800 calories.[13] This indicates clearly enough the marginal character of external wheat supplies which have amounted to 3% of domestic grain supplies. This percentage is now nearer 5% and is, of course, a much higher percentage of domestic wheat production.

P.L. 480 supplies have undoubtedly helped internally in curbing domestic prices of grain under short-supply conditions. Likewise, they have relieved the strain on India's foreign exchange, enabling a larger volume of non-food imports than otherwise possible. Alternatively, they have obviated the need to tighten belts further if we accept the claim sometimes made that India would not have imported the wheat except under non-commercial conditions. P.L. 480 deals may be "mutually convenient" to both the U.S. and India, but there is no reason to doubt their value to India.

There is a clear implication in all this for Australia. If the Third Plan succeeds India will cease to import grain. Except in years of disaster, Australia will not then have a market. If the Plan falls short of hopes or of rising Indian consumption levels, we may expect that aid will still be the keynote. We will continue to be on the horns of our present dilemma: do we press for an assured commercial market or throw in our lot wholeheartedly with "Food for Peace"? I have no objection to trying to preserve a modest commercial foothold. I do think however that we, as part of Western aid effort, may need to contribute more non-commercially. To ensure best use, we of the West and

[12] From unpublished work of Mr. R. K. Hefford.
[13] From unpublished work of Mr. R. K. Hefford.

India need to find more effective ways than we have so far, to link food and non-food import aid to India with her abundant labour resources in promoting India's economic development.

This is too large a subject to take further: it amounts to saying that I see India's external food supply problem continuing to be one of aid rather than of commercial marketing. We, therefore, cannot look to the Indian wheat market to supply the expansion we may need in our total export earnings.

This still leaves us with some scope to participate in Indian imports of minerals, mineral products and other manufactures.

Altogether, however, our economic relations with India cannot be approached in ordinary trading terms. India's economic growth, badly needed as it is for many reasons, may not in itself provide a large part of Australia's export market needs.

When we turn to *China* we have a quite different mixture of politics and economics and a far greater number of unknowns. I cannot assess the unknowns, but two or three points are worth bearing in mind. First, in view of our current political relations with China (or lack of them) we must assume that our economic relations, other than the restrictions on the export of strategic goods, will be conducted in commercial terms. This means if China wants our goods she will purchase—as she has steel, wool tops and lately, wheat. If China sells to us she must do so within our multilateral trading system including the operation of anti-dumping laws. We are not likely to accept her preference for barter trading.

We should not assume that trade with China will not develop. Her population problem is of the greatest magnitude. Her desire to industrialize quickly will be tempered by the need to feed her people—probably, too, at better standards than in the past. She may not be able to afford to sit so tightly on consumption levels for so long as Russia did. Yet if food and other consumer goods are to be imported China must export unless other Communist countries supply enough aid. This is not altogether likely and we may expect to have in China a competitor ready to sell regardless of normal Western concepts of costs. She may prove a rival for Japan in South-East Asia, setting a limit there to Japan's own expansion hopes. If this happens, Australia's expectations in Japan could be adversely affected.

If all this is true we can assume that China's interest in Australian products is one arising from need. Wheat is needed because of drought; but it may also be needed—as in the case of India—to allow some improvement in diet, both in terms of quantity and quality.

It is well to remember that Chinese imports of grain are marginal—even more so than in India's case. The large imports from Australia recently announced, amounting to between $2\frac{1}{4}$ and $2\frac{1}{2}$ million tons, come to well under 2% of her total production of food grains.[14] Yet even

[14] See Statistical Appendix of Choh-Ming Li: *Economic Development of Communist China.* Li shows total food grain production in 1955-56 at 161 million tons. This probably understates recent levels of production (pre-drought).

marginal requirements, variable, often nil, as they will be from year to year, could well ease the problem of holding larger carryovers in Australia than has been the wish of the Wheat Board in the past.

Whether in terms of food, wool or steel products, I do not dismiss China as a growing market. I would not pretend it is a predictable one, and would not expect it to be a stable one.

Indonesia is still in the stage of living out its political revolution. It has hardly begun to grow economically. As Higgins wrote rather sourly: "The late Hadzi Agus Salim once said that the Indonesian revolution has yet to enter its economic phase. As of mid-1958 the statement was still true".[15] It is all too true, still, despite the evolution of a modest enough plan designed to give economic development the necessary impetus.

Some development there is, but imports have been falling both absolutely and relatively to national income. Exports seem in fair shape, despite a bad year in 1958. As Higgins write in 1958:[16] "Sovereignty and prosperity are still too directly linked in the minds of most Indonesians". Despite apparent pre-occupation with West Guinea there are some signs of realisation that population pressure in Java really demands attention. It is clear that, as elsewhere in Asia, agricultural productivity must be raised. Moreover, trade policy has to be linked with economic development programmes.

All that can be said at this point is that Australia has a vital interest in successful development in Indonesia. Indonesia has already given evidence of its willingness to be a customer for steel and other metal manufactures—a need likely to grow as its development gets under way. Current political difficulties may hamper our efforts but I have little doubt that given Indonesian will to develop energetically, Australian and Indonesian economic progress will be more strongly linked than at present. In this connection it ought not be overlooked that Indonesia is a major supplier to Australia, especially of oil.

I hope it will by now be apparent from my fairly scrappy remarks on China, India and Indonesia that judgment is pretty qualitative. Certainly it is rather difficult to erect any very convincing model to estimate in quantitative terms Australia's share of their economic future. The ex-official in me recognizes this although the academic side is quite willing to discover that the truth is more hopeful. Perhaps the case of *Japan* is a more hopeful augury for here we have precise plans including anticipation of import needs.

Japan is a trading nation in the same sense as the United Kingdom —a fact of great importance to Australia. It has no prospects of self-sufficiency, being heavily dependent on external sources for certain foodstuffs, many minerals and other industrial raw materials, and much semi-finished and finished capital goods. The "New Long-Range

[15] Higgins: *Economic Development*, 1960, pp. 730 *et seq.*
[16] Higgins, *op. cit.*, p. 735.

Economic Plan, 1961-1970",[17] recently adopted by the Japanese Government, shows this trading character clearly. Gross National Product is to be doubled in ten years, with exports and imports rising both absolutely and relatively to G.N.P.

Many observers in recent years have noted Japan's rise in wealth and its Western style economic policy thinking and planning. The plan preceding the present one was prefaced in words familiar to Australians. The objective was "to provide for a steady increase in the standard of living and provide for full employment by accomplishing persistently the maximum rate of economic growth consistent with economic stability". Average income in 1959 was $300. The new Plan hopes to raise this per capita level to $579 in 1970, comparing with estimates of $404 in Italy and $742 in Germany in 1957.[17]

Put briefly, the Plan to double Gross National Product not merely assumes the necessary internal pattern of investment, savings and consumption but also some very important external situations. It also explicitly recognizes that Japan must expand exports to pay for needed imports. The Government knows that this cannot happen unless economic expansion and trade expansion occur elsewhere and that Japan must maintain and expand her present percentage share of world markets.

The Plan assumes a growth rate of 7·8% per annum which compares with 8·3% per annum achieved in the period 1953-59 and 17% and 10% in the Fiscal Years 1959 and 1960. Even the reduced rate projected will call for a very large absolute increase in trade. Imports, for example, would grow from $U.S.2·5 billion (1956-58) to $U.S.8·1 billion in 1970—a multiple of 3·2. If these imports were realized and Australia maintained her present share of these imports, (about 8%), our exports would grow from about £A135m. in 1959-60 to £A288m., an increase of some £150m.—a very welcome fillip indeed to our export prospects.

Nevertheless, despite recent success we need not lose our critical faculties. One noticeable change of emphasis in this Plan compared with the previous one is the reliance now placed on North America and Western Europe for export markets compared with South-East Asia and Africa not now so hopefully regarded. There are three factors at work: Japan seems to have maintained and developed access in Europe and North America somewhat better than she had dared hope. She has not expanded in Asia as fast as China in recent years although her absolute share remains greater. Moreover, as an exporter she, too, is troubled by the characteristic difficult balance of payments situation confronting underdeveloped countries.

Accordingly, how well Japan does in the next ten years depends upon liberal import policies on the part of Western Powers; holding her gains in Asia, against China particularly; and, of course, avoiding

[17] *New Long-Range Economic Plan of Japan* (1961-1970)—Economic Planning Agency, Japanese Government. Published in English by The Japan Times Ltd., Tokyo.

loss of competitive strength through internal inflation or over expensive imported raw materials. If, for example, the United States became a major importer of raw materials, as predicted by the Paley Commission, Japan could find the terms of trade moving against her. While Australia could benefit as a supplier of these raw materials we can note, nevertheless, that a very large slice of our future prospects is dependent upon the degree of success likely to attend the Japanese Plan.

Japan has moved from low down the list to third export market for us, after U.K. and Western Europe, counting Western Europe as one market. Unlike these two, Japan is a growing market both in volume and value. The trend in U.K. has been against us since pre-war and on the whole continues downward. Europe is up on pre-war but the trend is also down in recent years. [See Appendix I (e).]

In more specific terms we can expect continued growth in the market opportunity for wool and wheat—although probably not proportionately to other Japanese imports. We can expect to develop markets for meat and possibly dairy produce. Our greatest expansion is likely to come in coal, mineral ores, concentrates and scrap. I would not think it difficult to hold 8% of Japanese imports—provided our own costs remain competitive and our promotion effective. All told there is a prospect that Japan, already No. 1 Wool Market can, in the next decade, replace Britain as No. 1 total market for Australian exports.

To go further into our Asian prospects would put your patience to too much test. Beyond saying that I believe we can expand significantly our trade with Malaya and other Asian countries not here reviewed, I think it better now to sum up.

VI.

I make no pretence of careful analysis; nor can I carry conviction in any rough tests applied. Indeed, I have been doing very little more than exploring and illustrating a field of great interest for applied economics. The necessary work which might justify greater precision in forecasting Australian trade prospects has yet to be done. The Asian countries with whom Australia trades vary in complexity of economic, social and political structure, in their stages of economic growth and in their dependence upon trade. Japan is the major exception to the general rule that these countries are not in a condition of self-sustained growth based on adequate domestic savings and investment.

To lump them all together in a single econometric model would be worthless especially as our present empirical knowledge is not good enough to establish usable ratios of trade to national incomes. Fully worthwhile results can only come from patient work in relation to each country singly and their interrelations among themselves and with the rest of the trading world. This must be remembered in anything I now

say. For, perhaps using a Presidential address as some sort of excuse, I now speculate on the basis of the material I have today presented.

Let us bring a few rough guesses together. Assume the following, expressing each in terms of a *low* and a *high*.

1. (a) Britain enters the Common Market on terms that lead to substantial loss for our wheat and dairy produce exports.
   (b) At best we hold what we now have in U.K. and Europe.
2. We follow the recent slight upward trend in our North American market. [Low = less than trend.]
3. We follow a 2% to 4% upward trend in our exports to E.C.A.F.E. countries, excluding Japan. [This regards this year's exports to China as an exception rather than a rule.]
4. We hold our share in the Japanese market; but that (a) the Plan succeeds and (b) it falls rather short of hopes.
5. We continue to expand exports to N.Z. and the Pacific Islands, increasing our relative share somewhat.
6. For all other markets (Eastern Europe, Africa, Central and South America) we follow a trend which has been significantly upward.

Applying these results to our 1959-60 exports, and making no special allowance for improved terms of trade by 1970, we obtain the following.

	1959-60 Actual		1970 Low		1970 High	
	£m.	%	£m.	%	£m.	%
U.K. and Western Europe	435	46·4	375	34·5	435	33·0
North America	90	9·6	115	10·6	130	9·8
E.C.A.F.E. Region (excl. Japan)	94	10·0	115	10·6	142	10·8
Japan	135	14·4	235	21·7	288	21·8
N.Z. and Pacific Is.	86	9·2	105	9·7	135	10·2
All Other	98	10·4	140	12·9	190	14·4
Total	938	100·0	1085	100·0	1320	100·0

These results are worth very little in terms of precision. They assume that Asia and the Pacific will loom more largely in our trade pattern in the future for reasons I have outlined in this address. In this event, an expansion of exports in the next ten years by some £400m. is not an absurd hope, although some £250m. of it may need to be earned in the Asian-Pacific area. Nevertheless, it is certain that an expansion of this order will not come without thought or effort on our part: terms of trade are not likely to move in our favour by some 40% or more.

Whether we like it or not, we must recognize that if we need added exports we are under some compulsion to develop our markets in Asia. Because of the nature of the political, social and economic problems facing most of Asia, we cannot expect to enlarge our trade very successfully unless the countries concerned are able to develop their own economies.

This is true of Japan, our most hopeful prospect, for she cannot import unless she exports. Most other Asian countries will import more than they export, looking to substantial aid to support their essential imports. Australia's foreign economic policy must take cognizance of this.

My topic was "The Significance of Recent Developments in Asia for the Economic Future of Australia". My conclusion is that the significance is considerable. The economic future of Australia is substantially involved in Asia's ability to put the Malthusian devil into further flight, a result only possible if programmes of economic development succeed. This in turn calls for intelligent trade and aid policies on the part of the rest of the world, especially on the part of the West. Australia has strong incentives for sharing in these policies.

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APPENDIX I

The Direction of Australian Trade

Throughout Appendix I

1. *"Other West Europe"* includes the Channel Islands, Gibraltar, Ireland, Malta, Austria, Belgium-Luxembourg, Denmark, France, W. Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and Trieste, except that 1937-38 data also include E. Germany.
2. *"U.S.A."* includes Alaska and The Hawaiian Islands.
3. *"Pacific Islands"* includes the Australian Territories of Papua and New Guinea, Nauru, Norfolk Island, Cook Island, Western Samoa, Fiji, Gilbert and Ellice Islands, New Hebrides, Solomon Islands, Tonga, New Caledonia, Oceania, Dutch New Guinea, Guam, U.S. Samoa—and other U.S. Islands.
4. *"China"* includes Mainland China, Formosa, Hong Kong and Macao.
5. *"India-Pakistan"* includes India, Ceylon, Pakistan, Nepal and Bhutan.
6. *"South-east Asia"* includes Malaya, Singapore, British Borneo, Burma, Cambodia, Indonesia, Laos, Philippines, Portuguese Timor, Thailand and Viet Nam.

Import and export data in this Appendix were drawn from *Overseas Trade Bulletin* Nos. 50-57, Commonwealth Bureau of Census and Statistics, Canberra.

APPENDIX I(a)

Value of Imports by Area of Origin (£A.Million)

Area of origin	1937-38	Av. 1950-55	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	46·2	349·5	355·9	296·3	325·0	307·4	329·9
Other W. Europe	11·0	109·7	123·4	98·1	113·6	116·3	146·2
Canada-U.S.A.	25·8	106·6	122·1	117·7	127·5	131·7	179·3
New Zealand	2·0	5·9	8·5	12·0	12·8	12·5	15·9
Pacific Islands	3·3	9·2	12·5	12·5	12·8	14·1	14·9
Japan	5·3	17·8	22·6	12·9	23·8	29·9	41·5
China	0·6	4·0	5·1	5·0	6·6	7·6	9·7
India-Pakistan	4·0	45·0	34·1	35·6	33·0	33·6	32·8
South-east Asia	8·8	52·0	50·3	53·8	53·3	57·7	65·4
(of which Malaya-Singapore)	(1·0)	(20·6)	(17·7)	(11·7)	(11·6)	(12·8)	(19·4)
Other	6·9	67·6	86·6	75·3	83·6	85·8	90·8
Total Imports	114·0	767·4	821·1	719·0	791·9	796·6	926·4

APPENDIX I(b)

Value of Exports by Destination (£A.Million)

Destination	1937-38	Av. 1950-55	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	86·4	294·9	257·4	277·5	221·4	256·9	247·3
Other W. Europe	26·3	201·3	184·4	246·8	199·8	153·0	187·3
Canada-U.S.A.	13·1	89·7	66·3	77·2	60·5	78·3	89·8
New Zealand	7·1	31·5	40·9	51·0	55·5	49·6	54·3
Pacific Islands	2·7	19·3	25·8	29·0	29·2	28·4	31·9
Japan	5·9	61·7	86·5	138·9	102·7	102·3	134·7
China	1·9	10·4	17·6	30·4	22·8	26·5	26·8
India-Pakistan	2·0	31·4	22·7	45·9	22·8	17·5	29·0
South-east Asia	4·5	29·4	35·3	39·3	37·6	34·1	38·1
(of which Malaya-Singapore)	(2·1)	(20·4)	(21·4)	(23·2)	(24·0)	(23·0)	(23·6)
Other	7·8	56·6	44·9	56·9	65·7	64·7	98·5
Total Exports	157·6	826·1	781·9	992·9	817·9	811·5	937·7

APPENDIX I(c)

Percentage Composition of Imports by Area of Origin

Area of origin	Av. 1937-38	Av. 1950-55	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	40·6	45·6	43·3	41·2	41·0	38·6	35·6
Other W. Europe	9·6	14·3	15·0	13·6	14·3	14·6	15·8
Canada-U.S.A.	22·6	13·9	14·9	16·4	16·1	16·5	19·4
New Zealand	1·7	0·8	1·0	1·7	1·6	1·6	1·7
Pacific Islands	2·9	1·2	1·5	1·7	1·6	1·8	1·6
Japan	4·7	2·3	2·8	1·8	3·0	3·8	4·5
China	0·6	0·5	0·6	0·7	0·8	1·0	1·0
India-Pakistan	3·5	5·9	4·2	4·9	4·2	4·2	3·5
South-east Asia	7·8	6·8	6·1	7·5	6·7	7·2	7·1
(of which Malaya-Singapore)	(0·9)	(2·7)	(2·2)	(1·6)	(1·5)	(1·6)	(2·1)
Other	6·0	8·7	10·6	10·5	10·7	10·7	9·8
Total Imports	100·0	100·0	100·0	100·0	100·0	100·0	100·0

APPENDIX I(d)

Percentage Composition of Exports by Destination

Destination	Av. 1937-38	Av. 1950-55	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	54·8	35·7	32·9	27·9	27·1	31·7	26·4
Other W. Europe	16·7	24·4	23·6	24·9	24·4	18·9	20·0
Canada-U.S.A.	8·3	10·9	8·5	7·8	7·4	9·6	9·6
New Zealand	4·5	3·8	5·2	5·1	6·8	6·1	5·8
Pacific Islands	1·7	2·3	3·3	2·9	3·6	3·5	3·4
Japan	3·7	7·5	11·1	14·0	12·6	12·6	14·4
China	1·2	1·3	2·2	3·1	2·8	3·3	2·9
India-Pakistan	1·3	3·8	2·9	4·6	2·8	2·2	3·1
South-east Asia	2·8	3·6	4·5	4·0	4·6	4·2	4·1
(of which Malaya-Singapore)	(1·3)	(2·5)	(2·7)	(2·3)	(2·9)	(2·8)	(2·5)
Other	5·0	6·7	5·8	5·7	7·9	7·9	10·3
Total Exports	100·0	100·0	100·0	100·0	100·0	100·0	100·0

APPENDIX I(e)

Qantum Index, Australian Imports and Exports (Base 1953-54)[1]

Imports from	1937-38	1953-54	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	54	100	103	84	90	86	91
Other W. Europe	48	100	132	103	116	119	148
Other (including Japan)	85	100	126	118	126	133	159
World	65	100	116	99	107	108	124

Exports to	1937-38	1953-54	1955-56	1956-57	1957-58	1958-59	1959-60
U.K.	133	100	102	98	91	119	102
Other W. Europe	59	100	108	129	120	105	114
Other (including Japan)	65	100	126	155	151	174	194
World	88	100	113	128	122	137	141

[1] Value of imports deflated by the Reserve Bank Import Price Index; value of exports deflated by the Commonwealth Statistician's Export Price Index, *Quarterly Summary of Australian Statistics*, No. 240, June, 1960.

Appendix II

Table A

*Exports Required, Assuming G.N.P. Grows at 4% Per Annum (£A million)**

	1965–66		1970–71	
	Assuming net capital inflow 250	Assuming net capital inflow 150	Assuming net capital inflow 250	Assuming net capital inflow 150
1. If imports remain at 13·6% of G.N.P.	1264	1364	1593	1693
2. If import-saving is equivalent to ¼% of G.N.P. per annum	1124	1224	1254	1354
3. If import-saving is equivalent to ½% of G.N.P. per annum ..	985	1085	915	1015

Table B

*Exports Required, Assuming G.N.P. Grows at 5% Per Annum (£A million)**

	1965–66		1970–71	
	Assuming net capital inflow 250	Assuming net capital inflow 150	Assuming net capital inflow 250	Assuming net capital inflow 150
1. If imports remain at 13·6% of G.N.P.	1339	1439	1777	1877
2. If import-saving is equivalent to ¼% of G.N.P. per annum ..	1192	1292	1405	1505
3. If import-saving is equivalent to ½% of G.N.P. per annum ..	1046	1146	1031	1131

*For the purpose of projection, it was assumed that:

1. G.N.P. in 1960-61 will be £A7,350 million.
2. "Normal" imports in 1960-61 would represent 13·6% of G.N.P.
3. The cost of net invisibles will grow in proportion to the cost of imports, the ratio of net invisibles to imports remaining constant at 24·5% throughout this period.

Exports have been calculated as the residual necessary to avoid any movement in reserves.

MONETARY POLICY IN AUSTRALIA 1960/61*

1. *The background to the credit squeeze*

The most disturbing feature of the Australian scene to an economist returning here in mid-1960 was the real estate boom. Dr. Boehm has estimated that "during the two calendar years 1959 and 1960 land values in Sydney, as measured by the results of auction sales by the Department of Lands and by private developers, reached a level nearly twice as high as in 1958". In Melbourne the position was very similar. Funds were being sucked into this vortex of speculation from many sources. Hire purchase finance companies were using funds largely derived from short and medium term deposits by the public to provide bridging finance for house purchase: for example to bridge the gap between a loan of 70% of the value by a savings bank and the 15% owned by the purchaser. Property companies introduced "Land Trusts" in imitation of unit trusts to attract small sums from the public into the whole field of finance of land and buildings. £11 million was subscribed to them in their first year.

Further short term finance for building and real estate development was being provided by builders, by suppliers of building materials giving extended terms for payment and by commercial and financial companies. The financial structure was unsound and indeed dangerous in that too much short term money was being used to finance the acquisition of fixed illiquid assets at prices inflated by speculation. The boom was so strong and was being fed by such widespread sources of funds that it is difficult to see how it could have been checked without a general credit squeeze.

It might have petered out gently. Demand for home units had fallen off in some areas before November, 1960, and some finance companies were reducing their commitments. But there was a risk that it might have driven land prices up even further and faster and then collapsed causing serious damage. The elimination of this risk was one reason for the November measures.

In practice, of course, more attention was paid to the adverse balance of trade due largely to the increase in imports when most restrictions on them were lifted. It was hoped to restrain demand for imports by restricting credit.

Although an unfavourable balance of trade is often the underlying cause of weakness in the foreign exchange position, a foreign exchange crisis is usually the immediate result of capital movements. So the credit squeeze policy must be assessed both in relation to imports and to movements of capital. On imports, as we all know, the

* This was the first Edward Shann Memorial Lecture delivered in Perth on 20th July, 1961.

effects were slow. Because deliveries lag months behind orders there is bound to be a period when, after orders are cut back, deliveries continue at a high rate, as in January and February, 1961. This produces surplus stocks and some price cutting to get rid of them. It was reported for instance that in March prices of imported steel and steel products were being reduced in this way. Then a period of abnormally low imports can be expected while surplus stocks are absorbed, and importers and purchasers restore their liquidity. Only when this phase has passed can we expect imports to return to their new post-credit-squeeze-normal level, in the last few months of 1961 perhaps.

The effect of credit restraint on capital movements operates much more quickly; indeed its first effects are immediate. Before the firm action taken by the authorities on 15th November the position was dangerous. The structure of Australian industry, trade and finance is such that it is possible for large sums to move out of the country in many ways if there seems to be a risk of devaluation. Subsidiary and associated companies will naturally accelerate dividend payments, repay loans, or accelerate borrowing from overseas parent companies in such a situation, in order to reduce the risk of loss to the parent company from devaluation; overseas investors will buy fewer Australian shares or may begin to sell. The imposition of exchange controls to check such movements has the immediate effect of aggravating the loss of confidence and the more serious long-term effect of discouraging capital inflow in the future. A country that wishes to reap the benefits of a substantial inflow of foreign capital must pursue policies that enable it to retain the confidence of those who provide the capital. In Britain before 15th November there was grave concern in the minds of some of the best informed financial observers of the Australian scene; firm action by the Australian Government was needed to prevent a loss of confidence leading to a drain of funds outwards and a sharp reduction in the rate of net capital inflow. Moreover, the real estate boom was another source of danger. Australian history and that of other similar countries developing rapidly shows clearly that when a real estate boom is allowed to proceed to the point of spectacular collapse this causes a big reduction in the inflow of capital.

The action taken on 15th November was sufficient to ensure the continuation of the inflow of capital from overseas.

In judging whether some policy of restraint was on balance desirable in Australia in 1960, I should like to add some more general impressions which are personal and more controversial. Whereas in 1950 and 1955 inflation was world-wide, and rising prices were general, by 1960 this was no longer true. In Britain a check had been administered in September, 1957, so that for two years the rise was less than 1% p.a.[1] In France an even more significant and decisive policy to check inflation—the Rueff plan—had been carried through successfully; the German authorities were resolute to prevent another

[1] *International Financial Statistics,* April 1961—Changes in Cost of Living.

inflation; so in Europe prices were pretty stable. In North America, both in U.S. and in Canada the rise in prices was only 1% p.a. By comparison the rise in Australian prices of about 3% p.a. was out of line. It seemed likely that if Australia were to avoid devaluation without the help of a windfall such as the discovery of oil or a big improvement in the terms of trade some strong action was required to try to check inflation or at least to reduce it from the rate of 3% to that of nearer 1% p.a. I believe that such reasonable stability of prices would help, not hinder, the achievement of high levels of growth of national income, by making it easier to secure a balance in the economy and by encouragement of efficient production.

As Per Jacobsson, the managing director of the International Monetary Fund said in 1960: "I believe that the post-war inflation has come to an end, and that the price stability which has now prevailed for two years in world markets will not be upset by any new general inflationary upsurge. In a world in which most countries have stabilised their currencies there is no place for the opposite policy of continuing inflation".

2. *The credit squeeze: Stage 1*

The first stage of the credit squeeze was the period up to 15th November, 1960, when gradually increasing pressure was being exerted by the Reserve Bank on the trading banks to achieve a reduction in their overdrafts. There was disappointment that bank advances continued to rise. The feature of this episode which emerged most clearly was that a reduction in overdraft limits by bankers may not lead quickly to any reduction in bank advances, if borrowers make use of a larger proportion of their permitted overdrafts. However, it is important to go beyond this question of mechanism and ask why borrowers behave in this way, and whether this should be expected to recur. One particular reason was the finance of extra imports after import controls were relaxed. But the general reason was that no significant impression was created that the boom was going to be checked, and that businessmen would therefore be well advised in their own interests to shorten sail, to improve their liquidity by reducing their expenditures and their borrowing, and that individuals should improve their personal liquidity in the same way by postponing the purchase of a new carpet or reducing their hire purchase debt. In brief there was no significant expectation effect. The speeches of Cabinet ministers, the August budget, the general tenor of economic policy was not such as to induce any general retrenchment. Credit was not generally scarce; long term interest rates were low; the rates offered by savings banks for deposits were low and those for fixed deposits by the trading banks very low; funds continued to pour freely into the notes and deposits of hire purchase finance companies. It was often said "the Government will not really push this credit squeeze to the point at which it hurts, that sales of goods are reduced,

that people lose their jobs; they know that if they did that they would lose the next election". So although ordinary share prices started to fall, and some cautious businessmen reduced their orders, the general atmosphere was one of expansion, stimulated by the strong boom in real estate and building. No substantial recession—by British standards—had occurred in Australia for over 20 years; most of those who had ordered most heavily in the big import glut after the Korean war wool boom had escaped through the imposition of import restrictions, which enabled them to cancel unwanted orders, and through central bank releases from Special Accounts which provided the finance to carry heavy stocks instead of having to make forced sales at heavy losses. Thus a generation had found that it pays to borrow up to the hilt, that cautious preservation of liquidity in business was an outworn shibboleth.

For these reasons the economy in 1960 was less amenable to restraint than it used to be, or than it will be after the experience of 1961. A partial and incomplete attempt at restraint, by restriction of bank credit only, was a failure because it did not extend to a general rise of interest rates and scarcity of credit, and was not sufficiently supported by restrictive fiscal policy.

3. *Stage 2 in General*

The announcement of the Treasurer on 15th November did have a profound and significant expectation effect comparable to the effect of the measures announced in Britain in September, 1957, when Bank rate was raised to 7%.

This was reflected in a sharp drop in demand for consumer durables. The hire-purchase finance companies were immediately affected by the proposals that interest payments or any new borrowing would not be treated as a deductible item in assessing taxable income. There was a sharp reduction in the supply of funds for the finance of hire-purchase; but the demand for such credit fell off even more sharply. The matter is complicated by the imposition of a 10% extra sales tax on motor cars, and the fact that television set sales were falling away. But it seems clear that, although certain finance companies which were over-extended had to make drastic reductions in their provision of funds for sales on hire purchase, there were other large finance companies and retailers with funds to lend and insufficient demand for them.

It is true however that suppliers of hire purchase funds became more discriminating; some older cars were no longer eligible for finance and this naturally depressed the prices of second hand cars in general.

One large manufacturer of consumer durable goods made a special survey of his retail outlets with a view to providing them with funds to continue selling on hire purchase terms. He found that none was needed.

This expectation effect was quick. So was the effect on the real estate boom. It was definitely checked. Houses became difficult to sell, fringe finance was withdrawn, new housing starts declined, some speculative builders were soon in financial difficulty, a big property development group had to make immediate cut-backs even on work in hand.

An index of shares of property and hire purchase finance companies with 1st November, 1960, as 100 shows that by then these had already declined from a peak of 135 in August; as a result of the Treasurer's speech on 15th November the decline continued to a level of 80 in December.

Of course the full effects were not felt immediately; employment in the building industry had fallen off very little even by March, 1961, as labour was used to complete houses under construction and office buildings too. But there is little doubt that the whole outlook changed quickly. The high level of construction activity had led for instance to heavy imports of dear steel as home production could not satisfy demand. No reasonable person after 15th November would anticipate a further shortage of steel and order more from abroad at high prices. It was not long before B.H.P.'s orders fell and imported steel was being sold at prices reduced to the level of those of Australian steel.

A further qualification must be made. Not all the cut-backs after 15th November were due to the measures taken and announced then. Some such as the recession in branches of textile and paper manufacture were due more to the delayed effects of lifting of import restrictions; some generally contractionary effects were due to the gradual tightening of bank credit. But when every allowance is made for these time-lag effects, it remains true, in my judgment, that the Treasurer's speech on 15th November was of major importance; it caused a significant reduction in plans for spending by many consumers and some businesses. It was clear that credit was going to be generally scarce and dear for some little time.

4. *Time-Lags*

The length of time-lags varied greatly, as two successive interviews showed. I was told by one retailer how he had reduced orders right away in November. His liquidity was immediately affected because he had been using deposits from the public and these were reduced; he was affected too by the fall in ordinary share prices because the firm was on the market and the inflow of new funds from that source was delayed. The next retailer by way of contrast was in a strong financial position. It was January before he was aware that his stocks were a bit high; not till February did his banker insist that his overdraft be reduced. In January and February therefore he instructed his buying agents overseas to reduce their rate of ordering. This will be reflected in imports in August and September, 1961; for those goods are designed to go on display in October and November,

1961, for the Christmas trade. That, no doubt, is an extreme example, but there are many indications of a six to nine month time-lag between the placing of orders and the arrival of finished goods from overseas. Fortunately raw materials and semi-finished components which constitute a much larger part of total imports are delivered more quickly, after a lag of about three months on the average.

For local manufacture time-lags are shorter but again of course there is a wide range of variation. In the furniture trade a big retailer may normally buy on a hand-to-mouth basis from small manufacturers, for payment within seven days; the manufacturers neither carry stocks nor give much trade credit. Thus a fall in sales by the retailer is very quickly reflected in a corresponding fall in output by the manufacturers. In another industry large stocks are held both by wholesalers and by retailers; the manufacturers are big companies using capital-intensive methods of production; they produce to order and so that they may plan their production schedules efficiently they insist on orders being given well in advance—in February they will take orders for delivery in the April-June quarter for instance. In these conditions there is a substantial time-lag of three or four months before a fall in retail sales is reflected in a fall in manufacturing output unless wholesalers anticipate what is going to happen. Moreover when it does come the proportionate reduction in output by manufacturers is much greater than that in retail sales. In this case orders were cut back sharply in January-February for the output of the April-June quarter and manufacturing production was severely reduced.

Successful large retailers are expert at measurement and control of stocks; that is one reason for their success. Many smaller ones are slower to notice that their ratio of stock to sales has risen and to take action to reduce orders.

It would seem that in Victoria the first main effect of reduced retail sales due to the credit squeeze was reflected in a fall in local manufacturing activity in March and April, 1961. Most of the reduction in overtime work and introduction of short time working before then was due rather to the competition of imported goods affecting particularly textile manufacturers, and the completion of most first purchases of television sets. The motor industry was a special case; a fall in sales probably due anyway after the high level of the early months of 1960 was accentuated by the imposition of an extra 10% tax in November and the reaction of manufacturers in dismissing workers was apparently intensified in order to induce the authorities to rescind the tax.

A longer time-lag operates in the field of investment in fixed capital. In Australia in 1960/61, as in Britain in the recession of 1958, it seems that the really big long-term expansion plans of the large companies were not affected by a credit squeeze generally expected to be temporary. Not all investment in fixed capital is of this sort how-

ever. There are at any one time many schemes in train for small additions to capacity intended to cater for the immediate increase in expected demand. Many of these were pruned back hard. For example, one big retailer with many branches was expanding rapidly by building additions and new stores. He decided in February—when he came under pressure from his bankers—to carry through all existing contracts but to enter into no new ones. In his case, on the average, from the time he took a decision to go ahead it was 2 months before he made his first payment to the builders; then it took 6 months for the building to be completed. Thus his cash outlay in fixed capital investment would start to fall off in April and continue to do so until September, 1961.

That lag in the results of the November measures includes the surprising "banker's lag" in that not until February did this particular customer feel it necessary to decide to take action to reduce his overdraft. It is not suggested that this is typical. He was a large and good customer of the bank; possibly the bank hoped it would get by without forcing his overdraft down, and only did so late in the day. But some "banker's lag" is inevitable, and when a reduction in bank advances is achieved mainly by reduction in the rate of new lending this is bound to take several months. However, a reduction made in this way may involve a halving in the rate of new lending in order to achieve a 10% or 15% reduction in total advances. Such a situation is bound to press heavily on the young growing industrial firm.

Some firms however were much more quickly and severely affected by the November measures, immediately abandoned plans to build, and even cancelled contracts and stopped building work in progress. On the other hand, for many firms the period between taking a final decision and the commencement of building is longer than 2 months, when complicated tenders have to be submitted and examined. Thus it is not surprising that employment in the building industry in March had not yet reflected a substantial fall in fixed investment.

In house-building, the first effect was the sharp contraction in the supply of fringe finance in November. Much of this came from institutions vulnerable to the threat that interest paid on additional borrowings would not be treated as a deduction in calculating taxable income. To improve their liquidity they naturally reduced their loans in this field which were longer or less well secured than their hire purchase business. This was soon followed by a reduction in the main supplies of funds from savings banks as the rate of inflow of their deposits fell below expectations. From October to February, 1959/60, savings bank deposits rose by £20 million whereas in the same period in 1960/61 they fell by £20 million. In Victoria, the State Savings Bank was forced to impose a drastic reduction on new approvals to enable the Bank to recover from the position of being over-committed. It seems as if one reason for the fall in savings bank deposits was a transfer of funds to take advantage of the higher interest rate of 4% which the

trading banks were allowed to pay for 3 months' money after 15 November. Their fixed deposits rose by £61 million in the period October, 1960, to February, 1961, whereas in the previous year they had fallen by £14 million at this time of year. As they were under pressure to reduce their advances to a certain target the trading banks could not replace the savings banks as lenders for housing when deposits switched.

Speculative builders of flats and developers of new housing estates were hard hit by the withdrawal of fringe finance. It became evident that they were seriously undercapitalised for the work they were doing. They were engaged in investment in real long term assets largely financed by short term borrowing. The crisis in housebuilding in Victoria stimulated reconsideration of the whole pattern of housing finance throughout Australia. It also led the authorities to assist in the provision of extra finance for housing through the Commonwealth Savings Bank and in other ways before the general credit squeeze was relaxed.

5. *Trade Credit*

The significance of trade credit has only recently been realised by many academic economists and we are still badly informed on this subject, as from its nature statistics are difficult to obtain. My impressions derived from a number of interviews and confirmed by some recently published balance sheets of commercial and industrial companies are that the first effect of the credit squeeze was on balance to lengthen the average period of trade credit. This phase obtained in February, March and April, 1961. This accords with the effects of credit restraint in Britain as reported in evidence to the Radcliffe Committee. It is however in sharp contrast with the record of the recession of 1951-52 in Australia derived by A. R. Hall from his study of company accounts: he wrote "A further indication of the impact of the recession was the sudden drying up of the flow of trade credit, the experience of this year illustrating the dangers of the excessive use of this type of finance. For the first time since the war business confidence was severely shaken and companies generally ceased their former practice of freely lending to each other".[2]

On this occasion, as we have noted, one important aspect of recession has been the decline in purchases of durable goods by consumers; another was the withdrawal of funds from some concerns which had been accepting deposits and using these to finance hire purchase. Thus certain retailers accepting deposits from the public and selling durable goods on hire purchase terms were doubly squeezed, and they responded by postponing payment to suppliers. One large group switched from paying within 7 days to paying after 3 months. This no doubt was an extreme case. But the practice was sufficiently wide-

[2] *Australian Company Finance,* (The Australian National University, 1956), p. 48.

spread for a retailers' association to receive a deputation from manufacturers to ask them to try to induce their members to pay more promptly. There was a substantial involuntary extension of trade credit. It was patchy though. Some financially strong retailers continued to pay as before and were able to pick up bargains at reduced prices for cash. Some large manufacturers in a strong position were able to insist on prompt payment as usual. In textiles, however, where of course the fall in demand was accentuated by the removal of import restrictions, a large manufacturer in a strong financial position but selling in a highly competitive market used his funds to grant extra credit to distributors in order to reduce the drop in his sales.

Many of the suppliers to the building industry found that they were being paid later and later; trade credit stretched out from 60 to 90 to 120 days. Small timber firms were hard hit by this. As some builders failed their creditors faced the alternatives of accepting a very small payment in cash in settlement of their debts, or suffering from a further prolonged delay in repayment while the liquidators tried to complete contracts and to enforce payment for work done.

In general the expansion of trade credit has eased the plight of distributors at the expense of manufacturers. It has enabled financially strong firms to consolidate their position at the expense of weaker competitors. The expansion of trade credit has not frustrated the restrictive effects of monetary policy but it has prolonged the period over which it has taken effect. The abnormal expansion will be succeeded by a period when the contraction of trade credit will exert a substantial deflationary influence on the economy. It is practically certain that trade credit will contract down to normal levels. Where confidence has been shaken by business failures, as in the building industry, it may contract even further. Allowance must be made for this in planning for the future.

6. *Particular Measures*

The proposal to treat some interest on borrowed money as a non-deductible item for tax purposes raises wide questions of tax policy with which we are not concerned. From the point of view of monetary policy, however, this is clearly a once and for all sort of measure, not a tool of policy for regular use. No one has suggested that in a recession all interest should be made a deductible item and then as recession is succeeded by boom conditions some interest should become non-deductible again. In considering how best monetary policy can operate in future this measure can be ignored. The treatment of notes convertible into ordinary shares as if they were ordinary shares for tax purposes is also a once for all measure.

The 10% extra tax on motor cars was soon removed. It is to be hoped that this episode will not discourage the authorities from action of this sort in future to check inflation. The mistake was not in imposing such a tax but in taking fiscal action so late and on such a narrow

front. With the benefit of hindsight, one can now see clearly that when import restrictions were lifted in February, 1960, additional taxation should have been imposed to restrain spending power in combination with a restrictive monetary policy to prevent the upsurge of imports. It is noteworthy that the British Chancellor of the Exchequer in his budget of April, 1961, has taken power to make such variations in indirect taxes on a wide range of goods as may be required to stimulate or to restrain the flow of spending, at any time during the fiscal year.

The action to enforce minimum holdings of government and semi-government securities on insurance companies and pension funds however has important consequences for future monetary policy. This was a bad decision which will seriously hinder the effective control of the economy by flexible monetary policy in the future. The objective was to secure more investible funds for the finance of the public sector. This should have been achieved by offering high enough yields on government and semi-government securities to attract voluntary purchases by life assurance companies, pension funds and other investors. A rise of ½% above the level of February, 1961, would probably have been sufficient.

This would have reinforced the credit squeeze on the private sector both by forcing up interest rates for long term borrowing and by directing supplies of investible funds away from the finance of new industrial issues into government bonds. As the Radcliffe Committee recently emphasised in Britain a positive policy on long-term interest rates is an essential part of modern monetary policy.

It is sometimes suggested that the narrowness of the market makes it impracticable to carry out open market operations in Australia. This might be so if the object of policy were to achieve a certain volume of sales or purchases of securities in order to secure a certain contraction or expansion of the cash basis of the banking system and thus to control the lending capacity of the banks. This was the object in Britain in the 1920s described in the Macmillan Report. But in Australia today the Reserve Bank can control the lending capacity of the banks by variation of the Statutory Reserve Deposit ratio. The object of open market operations should be to achieve a certain rise or fall in bond prices, a change in the structure of interest rates. This is not impracticable in a narrow market. It does not matter if only small purchases are needed to lower the interest rate on ten year bonds by a quarter of one per cent.

When it is desirable to encourage investment and expansion in the private sector this can be done by lowering interest rates on government securities and so inducing the life assurance companies and pension funds in particular (and other investors too) to direct a larger part of their annual inflow of investible funds to the purchase of industrial securities, the making of mortgage loans and other methods of finance. These long term sources of finance are more important to industry than bank loans; 467 public companies in manu-

facturing industry surveyed by the Reserve Bank obtained 18% of their funds from these sources and only 7% from bank loans in the 1957-59 period.

But control over flows of investible funds in this way depends upon the freedom of the big suppliers of funds, the life companies and the pension funds, to change their distribution according to circumstances. This freedom will be gravely curtailed by the recent legislation. For the ordinary life business of the life companies a certain amount of flexibility will remain due to the sliding scale for section 115 deductions, but for their pension fund business and for the independent pension funds it seems probable that it will pay to achieve the stated rates—20% in Commonwealth securities, 30% in public sector securities—and to stay there; so that interest rate changes will have little effect on them. This is most unfortunate and one can only hope will be remedied by repeal of this legislation.

Summing up then on the credit squeeze since 15th November, 1960, I should say that the severe squeeze was salutary. It was necessary for the achievement of equilibrium in the balance of payments; whether it will prove to be sufficient for this purpose or whether other measures will also be necessary I do not know. The particular measures taken and proposed were not well chosen but this was less important than the overall toughness of the policy pursued.

7. *Future Policy*

A general scarcity of credit must not be allowed to continue for longer than six or nine months. By June, 1961, in Australia the credit squeeze had done its job. It was time for credit to be relaxed. A long-drawn out credit squeeze is not the right way to deal with disequilibrium in the balance of payments. Britain's sad experience in the years 1925-31 demonstrates that beyond question. No one could confidently claim in June, 1961, that the Australian balance of payments problem had been solved. It could, however, be claimed that the credit squeeze had played its part; it had produced sufficient recession to check speculation and to redistribute resources. Credit must be relaxed to enable growth to continue; if at the levels of spending of mid-1961 the balance of payments were still adverse other measures to deal with it must be taken.

The general arguments for relaxation of credit after 7 months of scarcity are that a further prolongation will damage long-term investment and the growth of young efficient firms. It must be remembered that time-lags are substantial at this stage. Turning to the particular case of Australia in June, 1961, some deflationary forces were still in the pipe-line. Employment in manufacturing was falling in May; this would lead to reduced spending by consumers in subsequent months; as noted above trade credit was due for a contraction; stocks were abnormally high in some instances; a leading motor manufacturer was taking the exceptional course of making for stock relying

on some upturn in sales within two months. Decisions taken some months before on investment in fixed assets were bound to lead to a further contraction of expenditure in this sector, e.g. the retailer mentioned earlier whose expenditure on extensions was going to continue falling until September. For all these reasons a substantial relaxation of credit controls would be needed in order to achieve a small increase in activity. Thus part of any increase in bank credit would merely offset a contraction of trade credit, part would be used by firms to build up cash balances to a comfortable level, part would be used to carry stocks that otherwise would have been liquidated by forced sales. So for cyclical reasons a substantial relaxation of credit was needed.

But that was not all. For the structure of the Australian financial system had been distorted for many years by the concentration of anti-inflationary policy on the control of bank advances. The growth of the banks had been held down well below that of the rest of the economy. Many of the services they used to provide were therefore being given instead less efficiently at much higher cost by hire-purchase financiers and other fringe institutions. In order to increase the efficiency of the financial mechanism as a whole it was most important to encourage a large expansion of bank advances. This would have the incidental advantage that it would facilitate the conduct of monetary policy in future because the banks are much easier to control than the fringe financiers. In June, 1961, in Australia the time was ripe to redress the balance in this respect, as was done in Britain in 1958, when the banks were freed to expand. This freedom should include freedom to experiment with newer forms of lending such as term loans to business and personal loans to individuals on fixed monthly repayment terms. Substantial expansion in these directions might make it desirable to increase the capital and the fixed deposits of the banks to match the slightly longer term nature of their lending.

The main argument for the introduction of term loans is that today business spends much more on plant and machinery relatively to stocks of raw materials than it used to do when the canons of British banking were established; it is therefore desirable that this method of finance should be used, matching the time-pattern of receipts from the use of machinery, instead of the six month overdraft appropriate for financing the purchase, processing and sale of raw materials. Personal loans on fixed monthly repayment terms, as introduced by the Midland Bank in England, are a cheap and efficient method of financing the acquisition of durable goods by consumers as well as such expenditures as house repairs. They would provide healthy price competition for hire purchase finance companies and help to prevent this business from becoming set in a high-cost pattern. Success in this field might well prove to be more helpful than any set of government regulations for the control of hire-purchase finance companies. It is unfortunate that in Australia as in Britain the trading banks have substantial

shareholdings in hire-purchase finance companies, as this may discourage them from aggressive direct lending to individuals for the purchase of consumer durable goods and to business for the purchase of plant and equipment. A radical solution would be to compel the banks to divest themselves of their shareholdings in hire-purchase companies.

British experience teaches the lesson that the latent demand for bank advances was much greater than most people had expected. It may be necessary therefore to envisage some possible tightening of fiscal policy to accommodate the expansion of banking without risking renewed inflation. Such a combination is what is required to encourage investment and long-term growth; for fiscal policy can be used to restrain consumption, and in particular consumption of articles with a high import content such as petrol, while the expansion of bank credit can do much to stimulate investment by young fast-growing firms which are bound to have suffered severely from the credit squeeze. We should recognise that short-term political considerations point to the opposite policy of continuing to suppress bank credit while making some tax reductions. So it is worth stressing that this would be unfortunate.

Looking further ahead it will probably be necessary again to restrain credit from time to time. The success of credit restraint in 1961 will make this easier on subsequent occasions, for measures taken by the authorities will be expected to succeed again. But it should be recognised that two of the measures that contributed substantially to the expectation effect in 1960/61, the non-deductibility of interest for tax and the compulsory ratios of public securities for life insurance companies and pension funds, cannot be used again. How then can the authorities best proceed to secure the quick response of the expectation effect in future to reinforce the slow but sure effects of contraction of bank credit?

In Britain movements of Bank Rate have this expectation effect at home and abroad. This is now perhaps the most important aspect of Bank Rate. It is a symbol of the determination of the authorities to contract or to ease credit because it has been used in this way for so long. But a symbol cannot be created overnight. So it seems more helpful to look to the United States. There no one instrument has the weight of expectation effect of Bank Rate in Britain. But the Federal Reserve System has achieved much by careful public explanation and description of the situation as they see it and of their policy moves. They have made it clear in this way when they think a boom needs restraint and that they are taking action. This seems the best policy for Australia. Already the Annual Report of the Reserve Bank and the speeches of the Governor do much in this direction. It is to be hoped that it will prove possible to supplement these by more frequent written assessments of the situation, perhaps by enlargement of the monthly Statistical Bulletin of the Reserve Bank to include more

descriptive articles, as in the Federal Reserve Bulletin, or by the publication of a Quarterly Survey. It would also be helpful if the Treasurer took power, as has recently been assumed in Britain, to vary certain taxes at any time during the year so that fiscal and monetary policy can be employed together in controlling the economy.

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SOME DEMOGRAPHIC OBSERVATIONS ON FIRST ORDER BIRTHS IN THE LIGHT OF THE COHORT APPROACH

1. *Size of Completed Family*

The chief aim of the modern approach in demographic analysis (or, at least so in the British concept) has been the study of changes in the size of the completed family. "Size" means average size of all families, or all couples with potential families, that have been grouped together according to certain criteria. What is new in the approach hinges on these criteria.

A study of population movement with this aim in mind must be a longitudinal one; that means, observation must be continued over the whole span of some twenty years of reproductive behaviour of couples, from the moment of their marriage to the time the last child in a family is, or is likely to be, born.

The study of trends requires, then, not short-term but middle-term if not long-term observation of those factors of population change that involve fertility and reproductive behaviour.

"Will fertility change?"—the question was raised before a wide public in the 1959 Reith Lectures of the BBC, which were delivered by the English biologist Professor Medawar.[1] It is convenient to quote from the first of these lectures a few sentences that not only outline the problem but define the term "cohort approach" I have used in the title of this paper.

2. *Cohort Analysis*

> 'The life of a nation goes on from day to day and from year to year, and the changes that happen, historical changes, are marked against a scale of calendar time. But the lives and livelihoods and reproduction of men and women are marked against years of age, and the natural unit of demographical prediction is not, therefore, a calendar year or a sub-division of a century but a life or a sub-division of life.
>
> 'The analysis of populations in terms of the changes that occur from one calendar year or decade to another is sometimes called "secular analysis", and obviously it must be reinforced by analysis of a different style: one which takes all the people born in one year or married in one year and follows them through their lives. Analysis of this kind is called "cohort analysis"—it slices time lengthways instead of cutting across it year by year. The adoption of cohort analysis is the most important advance in practical demography of the past ten years.'

The first Reith lecture, from which I have quoted this statement, may have done a good deal to foster a wider interest in the fairly new demographic method of cohort analysis. The considered judgment of a scientist must have cheered those demographers who helped to develop this method and who have applied it—P. K. Whelpton and N. B. Ryder in the United States, D. V. Glass, E. Grebenik, J. Hajnal, and the General Register Office in the United Kingdom.

[1] P. B. Medawar, F.R.S.: *The Future of Man.* The Reith Lectures, 1959. Methuen, 1960.

Mean Family Sizes of New Zealand Non-Maori Marriage Cohorts

Reached at the End of Each Year of Marriage Duration

Cohort	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1913	·46	·79	1·11	1·39	1·66	1·91	2·12	2·32	2·48	2·62	2·73	2·84	2·93	3·01	3·08	3·13	3·18	3·22	3·25	3·27
1914	·45	·79	1·14	1·43	1·70	1·94	2·16	2·34	2·50	2·64	2·76	2·87	2·96	3·04	3·11	3·16	3·20	3·24	3·27	3·29
1915	·43	·77	1·10	1·37	1·60	1·84	2·04	2·21	2·35	2·47	2·59	2·68	2·77	2·84	2·89	2·93	2·97	3·00	3·03	3·04
1916	·41	·72	·99	1·21	1·49	1·70	1·88	2·04	2·18	2·29	2·40	2·49	2·56	2·62	2·67	2·72	2·75	2·78	2·80	2·81
1917	·46	·76	1·03	1·36	1·61	1·83	2·03	2·19	2·33	2·46	2·57	2·66	2·74	2·80	2·85	2·90	2·93	2·96	2·98	3·00
1918	·41	·73	1·11	1·39	1·66	1·89	2·09	2·25	2·39	2·52	2·63	2·72	2·80	2·87	2·92	2·96	3·00	3·03	3·05	3·07
1919	·36	·78	1·13	1·43	1·67	1·89	2·08	2·24	2·37	2·49	2·59	2·68	2·75	2·81	2·86	2·90	2·94	2·97	2·99	3·01
1920	·41	·73	1·05	1·29	1·50	1·69	1·85	1·99	2·10	2·20	2·28	2·35	2·41	2·46	2·50	2·53	2·56	2·58	2·59	2·61
1921	·42	·71	·99	1·23	1·43	1·62	1·77	1·89	2·00	2·09	2·18	2·24	2·30	2·34	2·38	2·41	2·43	2·45	2·47	2·48
1922	·42	·73	1·01	1·25	1·45	1·62	1·78	1·91	2·02	2·11	2·19	2·25	2·31	2·35	2·39	2·42	2·44	2·47	2·48	2·50
1923	·40	·68	·96	1·18	1·37	1·54	1·69	1·81	1·92	2·00	2·08	2·13	2·19	2·23	2·27	2·30	2·33	2·35	2·37	2·38
1924	·39	·68	·95	1·17	1·37	1·54	1·68	1·80	1·89	1·97	2·04	2·11	2·16	2·20	2·24	2·27	2·29	2·31	2·34	2·35
1925	·39	·68	·94	1·16	1·35	1·51	1·65	1·77	1·86	1·95	2·01	2·08	2·13	2·18	2·21	2·25	2·27	2·30	2·32	2·34
1926	·39	·68	·94	1·16	1·35	1·52	1·65	1·77	1·86	1·95	2·02	2·08	2·13	2·18	2·22	2·25	2·28	2·31	2·33	2·35
1927	·40	·68	·94	1·17	1·36	1·52	1·65	1·77	1·87	1·96	2·03	2·10	2·15	2·20	2·24	2·27	2·30	2·33	2·36	2·38
1928	·38	·67	·92	1·14	1·32	1·48	1·61	1·73	1·83	1·91	1·99	2·05	2·11	2·17	2·21	2·25	2·29	2·33	2·35	2·37
1929	·38	·67	·93	1·14	1·32	1·47	1·59	1·71	1·82	1·91	1·98	2·06	2·12	2·17	2·22	2·27	2·31	2·34	2·37	2·39
1930	·37	·66	·91	1·12	1·31	1·46	1·60	1·72	1·82	1·91	2·00	2·08	2·14	2·19	2·25	2·30	2·34	2·38	2·40	2·42
1931	·39	·66	·91	1·12	1·31	1·48	1·62	1·74	1·84	1·93	2·03	2·11	2·19	2·26	2·32	2·38	2·41	2·44	2·47	2·48
1932	·37	·65	·89	1·09	1·28	1·44	1·58	1·71	1·82	1·93	2·03	2·11	2·19	2·26	2·32	2·38	2·41	2·44	2·47	2·48
1933	·36	·65	·89	1·10	1·30	1·47	1·62	1·75	1·88	1·99	2·08	2·17	2·26	2·34	2·40	2·44	2·48	2·51	2·53	2·54
1934	·34	·60	·85	1·06	1·25	1·42	1·57	1·71	1·83	1·93	2·04	2·14	2·22	2·30	2·35	2·39	2·42	2·45	2·47	2·48
1935	·33	·61	·86	1·08	1·28	1·47	1·63	1·78	1·90	2·01	2·12	2·23	2·31	2·37	2·42	2·46	2·49	2·52	2·53	2·55
1936	·31	·58	·82	1·04	1·25	1·45	1·61	1·73	1·86	2·00	2·11	2·20	2·28	2·33	2·39	2·43	2·47	2·49	2·51	2·53
1937	·30	·58	·83	1·07	1·30	1·48	1·62	1·77	1·91	2·04	2·15	2·23	2·30	2·35	2·39	2·43	2·46	2·48	2·50	2·51
1938	·30	·59	·87	1·13	1·35	1·52	1·68	1·85	2·00	2·13	2·23	2·31	2·38	2·43	2·48	2·51	2·54	2·56	2·58	2·60
1939	·28	·59	·87	1·12	1·31	1·50	1·68	1·85	2·00	2·12	2·22	2·29	2·35	2·41	2·45	2·49	2·52	2·55	2·57	2·58
1940	·28	·58	·79	1·00	1·20	1·42	1·62	1·79	1·93	2·04	2·14	2·21	2·28	2·33	2·38	2·42	2·45	2·47	2·49	
1941	·28	·56	·76	·95	1·16	1·38	1·57	1·74	1·88	1·99	2·08	2·17	2·23	2·29	2·34	2·38	2·41	2·44		
1942	·31	·58	·79	1·03	1·27	1·49	1·68	1·83	1·97	2·08	2·17	2·26	2·33	2·39	2·43	2·47	2·51			
1943	·29	·57	·85	1·13	1·39	1·62	1·81	1·98	2·11	2·22	2·31	2·39	2·46	2·51	2·55	2·62				
1944	·33	·64	·94	1·21	1·46	1·67	1·84	1·99	2·12	2·22	2·31	2·39	2·43	2·49						
1945	·31	·66	·98	1·26	1·50	1·70	1·88	2·02	2·15	2·26	2·35	2·43	2·49	2·55						
1946	·33	·69	·99	1·27	1·51	1·71	1·89	2·03	2·16	2·27	2·36	2·44	2·50							
1947	·37	·70	·99	1·26	1·50	1·70	1·87	2·01	2·14	2·25	2·34	2·42								
1948	·35	·68	·97	1·25	1·49	1·70	1·89	2·04	2·17	2·28	2·37									
1949	·33	·66	·96	1·24	1·47	1·68	1·86	2·01	2·13	2·24										
1950	·33	·66	·97	1·26	1·51	1·74	1·92	2·08	2·22											
1951	·33	·66	·96	1·25	1·50	1·72	1·91	2·07												
1952	·33	·65	·96	1·25	1·49	1·71	1·90													

For the special question raised by this paper, the central problem in cohort analysis, that is of the size of completed family, is not directly relevant. But as a general point of view it is well to keep it in mind, and as background information it will be useful. Table I gives, therefore, as a summary of all birth-orders combined, the reproduction of forty New Zealand marriage cohorts (1913-1952), with the performance of the youngest cohorts as yet incomplete. (This circumstance gives table 1 the cut-off appearance.)

By cohorts—to add another piece of definition—we mean in this context always marriage cohorts, that is, all women *married* at the same time, or rather within the short period of a year, form a cohort each. There are other ways of defining a cohort, for example, all women *born* at the same time who may get married at different times and build families at different times, for whom the older term "generation" is often preferred.

The New Zealand vital statistics records on births by duration of marriage have been kept since 1913. Our main material can therefore be the performance of forty cohorts from 1913 to 1952.[2] Twenty-seven of them (1913-1939) have a virtually complete record of fertility, and the remainder is in various stages of incompleteness, with the youngest (1952) having seven years of reproductive performance up to 1958 behind it.

3. *First Order Births*

This, then, is the framework of our discussion of first order births. When we speak of *first order births*, we mean first maternities resulting in a live birth, and these can be classified relative to marriage as—

(a) those maritally conceived and born, whether within a year since the date of marriage or at any later duration of marriage up to 20 years;
(b) those premaritally conceived but born within marriage;
(c) those ex-nuptially conceived and born but with a portion legitimized by subsequent marriage.

The dividing line between the second and third group is the fact of marriage before birth takes place. Since some comments made nearly 30 years ago by A. G. Butchers[3] no study of ex-nuptial births in New Zealand has been undertaken as far as I know. One of the difficulties is that statistics of subsequent legitimation are not clearly linked to those of ex-nuptial births. But if the problem is considered within the framework of our three categories, it becomes obvious that those comments cannot be claimed to have been well-informed.

The second group, where the bride is in an early or advanced stage of pregnancy, is commonly referred to as "shotgun marriages"

[2] After 1952, the registration records of non-Maori and Maori marriages were merged but the detailed birth statistics continued for non-Maori maternities only.

[3] Butchers, A. G.: *Education in New Zealand*, Dunedin 1930 (ch. 31, problems of social welfare, p. 469).

but the inaccuracy of the term in any scientific sense will be obvious on consideration. This group does, of course, include those cases in which marriage takes place at the time it does (or takes place at all), and therefore determines the membership in a particular marriage cohort, because of pregnancy of the bride. But it is not good logic to reverse this causal connection, and say that in all cases of this group no marriage would take place without prior pregnancy (which is what the popular term implies). Nor would it be correct to say that in all cases of this nature premarital conception was not deliberate. However that may be, demographically we cannot distinguish the subgroup of what would be genuine "shotgun" marriages from those in other cases which have been, and continue to be (whether in this or in other countries) a legitimate and socially sanctioned form of family formation and family building. It is, for example, generally believed that rural-urban differentials are relevant in this respect, and there is some evidence to this effect in societies which contain a substantial element of peasant communities.

4. *"Within less than eight months since marriage"*

We must now be more precise about the definition of the second group of first order maternities. This definition is (understandably in view of the nature of the raw data of vital statistics available for demographic analysis) based on inference rather than on evidence. Alone for the sake of international comparability, this part of our definition is, then, best given in statistical terms.

We count here as belonging to the second group of first order births that are premaritally conceived: all those maternities that occur within less than *eight* months since the date of marriage. If I am not mistaken, I have found in one of the few recent oversea studies of the subject all maternities within less than *nine* months since marriage counted as premaritally conceived.[4] This difference in definition leads of course to differences in the raw data used for the estimate of premarital pregnancies.[5]

The numbers of births within eight months since marriage and of ex-nuptial births, by calendar-years, will be found in Table 2. Insofar

[4] Hortsmann, K.: *Schwangerschaft und Eheschliessung* (pregnancy and marriage), Internat. Population Congress Vienna, 1959, p. 184.

[5] Perhaps the best compromise is that suggested as long ago as 1895 by R. Boeckh, Bevoelkerungsbewegung, *Stat. Jahrb. der Stadt Berlin*, vol. 22, 1895, p. 51, who counted in an investigation of a Berlin registration district as premaritally conceived all births within the first seven months since marriage, plus 2/3 of those in the eighth, plus 1/3 of those in the ninth month since marriage. One would like to think that he assumed this made sufficient allowance for the fairly high proportion among first births of shorter than average gestation. A trial showed that if Boeckh's method were applied to our New Zealand data, the numerical differences between his and our method are negligible. For all years 1913-1959 (except 1942) the Boeckh count gave 107,320, our count 107,670 pre-maritally conceived births. The net difference of 350 consists of 17 minus-differences totalling 187 and 29 plus-differences totalling 537.—See also the recent study by Bergerhof, H. G., *Bedeutung der vorehelichen Konzeption fuer die Eheschliessung* (Deutsche Akademie fuer Bevoelkerungswissenschaft, Reihe B Studie 3, Hamburg 1956).

as these two figures combined represent all pre-marital conceptions, there is some reason for giving the percentage of each. Even a brief examination of these percentages (col. 3 and 4 of Table II) will, however, show that there is not a simple answer. It is, therefore, necessary to widen the enquiry rather than consider the two categories of pre-marital conceptions out of their context.

TABLE II: *PRE-MARITAL CONCEPTIONS, 1913-1959*

Calendar-Year	Number of Births		Percentage	
	in wedlock (1)	ex-nuptial (2)	in wedlock (3)	ex-nuptial (4)
1913	1913	1181	61·8	38·2
4	1860	1302	58·8	41·2
5	1687	1152	59·4	41·6
6	1536	1146	57·3	42·7
7	1345	1159	53·7	46·3
8	1181	1169	50·3	49·3
9	1219	1138	51·7	48·3
20	2045	1424	59·0	41·0
1	2047	1258	61·9	38·1
2	1921	1226	61·0	39·0
3	1935	1260	60·6	39·4
4	1992	1338	59·8	40·2
5	2034	1332	60·4	39·6
6	2163	1473	59·5	40·5
7	2243	1387	61·8	38·2
8	2131	1383	60·6	39·4
9	2199	1327	62·4	37·6
30	2272	1371	62·4	37·6
1	2242	1315	63·0	37·0
2	2193	1262	63·5	36·5
3	2130	1119	65·6	34·4
4	2112	1161	64·5	35·5
5	2009	1046	65·8	34·2
6	2138	1126	65·5	34·5
7	2198	1210	64·5	35·5
8	2236	1164	65·8	34·2
9	2220	1133	66·2	33·8
40	2339	1284	64·6	35·4
1	1841	1281	59·0	41·0
2	. . .	1339	—	—
3	1383	1467	48·5	51·5
4	1627	2020	44·6	55·4
5	1657	1824	47·6	52·4
6	2212	1824	54·8	45·2
7	2613	1727	60·2	39·8
8	2427	1686	59·0	41·0
9	2238	1671	57·3	42·7
50	2221	1768	55·7	44·3
1	2219	1935	53·4	46·6
2	2286	2104	52·1	47·9
3	2347	1997	54·0	46·0
4	2490	2100	54·3	45·7
5	2694	2264	54·3	45·7
6	2705	2310	53·9	46·1
7	2810	2549	52·4	47·6
8	3076	2689	53·4	46·6
9	3284	2792	54·1	45·9

5. *The Pattern of First Order Fertility*

If one uses only vital statistics of calendar years—often referred to as cross-section, or in Professor Medawar's term as secular—one can show the maternities within less than eight months since marriage only as a proportion of all maternities in all twelve months of the first year since marriage.

But quite a few, in fact between one-half and two-thirds of all first order births occur, not in the first year of marriage but at later durations. Cohort analysis has shown that the whole pattern of "timing" of first order fertility is one of considerable variation. Proportions that express births within less than eight months since marriage as per cent of all births in the first year turn out, therefore, to be grossly misleading; they tend to conceal the demographic pattern of pre-marital conception, and the demographic facts must be stated clearly before we can hope for a sociological understanding.

The only way to stop using such misleading proportions derived from "secular analysis" is to put something more meaningful in its place, and this is precisely what a cohort analysis enables us to do. For it is in the longitudinal view of the cohort approach that it becomes possible to relate maternities within less than eight months since marriage to all first order births of whatever duration.

6. *Fertility Rates*

I must try here not to confuse the issue with the somewhat intricate problems of a statistical nature that have to be solved when the record given in the conventional form of annual returns is being sorted out in terms of cohorts. The details are given elsewhere.[6]

One important point, however, to be stressed is that all figures have to be produced not as proportions of raw data of numbers of births of the first order for successive durations of marriage. But, in a more abstract way, we are using rates which relate duration-specific numbers of births to the size of a cohort at that specific duration, and hence the *changing* size of such cohorts from one duration to another. For example, a group of women married at the same time who, at an early duration with usually high fertility rates, is exposed to an epidemic, such as the influenza of 1919, will for that reason perform differently from a cohort that is constantly being increased in size by net gains in external migration. Similarly, different cohorts are exposed to a different degree and at different stages of their generation to risk of widowhood, including war-widowhood, of mortality, and of divorce, with each of these events having a different measurable effect according to the marriage duration when it occurs.

All such factors of change can be held constant, if instead of analysing absolute numbers of maternities, we analyse what is called duration-specific rates of fertility. There are, altogether, eight sets of

[6] Jacoby, E. G., "A Fertility Analysis of New Zealand Marriage Cohorts", *Population Studies*, vol. XII, No. 1, July, 1958.

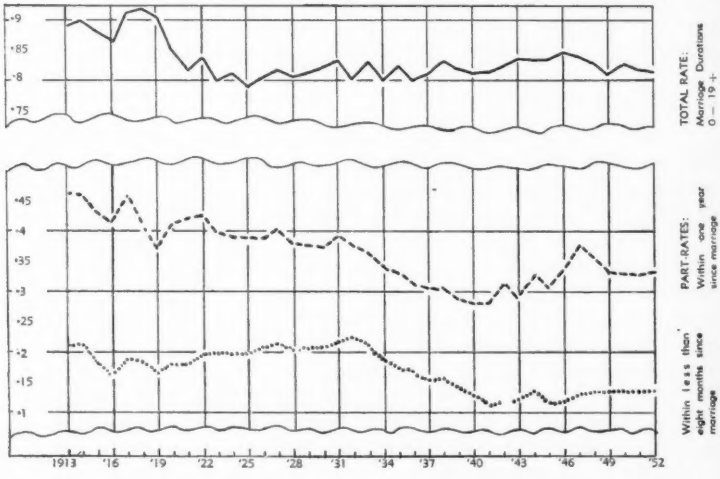
rates for each cohort, one for each birth order from the first to the eighth or later child in a family. This study is restricted to first order births.

7. *The Information*

The results of investigations of this nature are presented here for first order births by one comprehensive diagram. The detailed figures are given in Table 3. The diagram illustrates for our forty cohorts both the general pattern of performance and, viewed over the whole length of our time series, the variation of this pattern. The variation in which we are interested is clearly of two kinds. It is firstly a long-term and gradual change of the pattern itself, something that may be called "structural change"; and it is secondly of the nature of temporary fluctuations that express themselves by ups and downs within the general trend revealed by the whole curve.

FIGURE I:

First Order Births—Fertility Rates of forty marriage cohorts (New Zealand non-Maori 1913-52)



Our diagram gives three such curves which represent:

(1) total first order birth rates, cumulated for all durations,
(2) first order birth rates during the first duration, that is within one year since marriage,
(3) first order birth rates within less than eight months since marriage, that is, those deemed to be due to pre-marital conception, or belonging to our second group mentioned earlier on.

The three curves on the one sheet thus afford some appreciation of the differences in general trend of each. It will, for example, be seen

TABLE III:

COHORT FERTILITY RATES OF FIRST ORDER BIRTHS

Marriage Cohort	(1) at *all durations* of marriage		(2) within *one year* since marriage	(3) within *eight months* since marriage (premar. conc.)	Col. (3) = % of Col. (1)
	duration (1958)	rate*			
1913	20+	·890	·458	·208	23·4
4	"	·898	·452	·207	23·0
5	"	·879	·426	·182	20·7
6	"	·862	·410	·159	18·4
7	"	·914	·455	·189	20·7
8	"	·918	·407	·186	20·3
9	"	·909	·363	·167	18·3
20	"	·849	·412	·179	21·1
1	"	·818	·420	·178	21·7
2	"	·840	·423	·195	23·2
3	"	·800	·395	·197	24·6
4	"	·810	·391	·196	24·2
5	"	·793	·388	·196	24·8
6	"	·807	·388	·205	25·4
7	"	·818	·398	·213	26·1
8	"	·808	·381	·203	25·2
9	"	·811	·376	·204	25·1
30	"	·820	·373	·205	25·0
1	"	·830	·389	·215	25·9
2	"	·801	·375	·223	27·8
3	"	·828	·364	·211	25·5
4	"	·800	·336	·192	24·0
5	"	·824	·325	·175	21·2
6	"	·802	·310	·165	20·6
7	"	·809	·302	·153	18·9
8	"	·830	·301	·153	18·4
9	20	·822	·285	·141	17·1
40	19	·812	·277	·128	15·7
1	18	·813	·283	·113	13·9
2	17	·824	·312	—	—
3	16	·836	·289	·124	14·9
4	15	·835	·322	·140	16·8
5	14	·834	·305	·117	14·0
6	13	·842	·332	·119	14·1
7	12	·840	·369	·132	15·7
8	11	·829	·350	·136	16·4
9	10	·810	·330	·131	16·2
50	9	·829	·326	·134	16·2
1	8	·818	·326	·134	16·4
2	7	·816	·329	·137	16·8

* for cohorts 1940-1952 assumed complete at 20 durations

that *total* performance, apart from a decline from the level reached by the oldest cohorts, has on the whole changed hardly at all: this means that the proportion of childless couples has been fairly stable in the long run. The second curve, however, shows a long-term decline, with some later recovery, and therefore indicates changes in timing of first births, namely a declining proportion occurring *within one year* since

marriage. The direction of the third curve should, then, be compared not only with the second immediately above it but with the curve of total performance of each cohort over the whole of its 20 year reproductive period.

If in this way births due to pre-marital conception are compared with total first order births, it becomes clear that a substantial and conspicuous decline in the proportion of the former has taken place between the early thirties and the early forties, and that this decline shows as yet no signs of recovery. This development can be claimed a structural change which may be summarized by three proportions—

1913	23·4
1935	21·1
1952	16·8

8. *Temporary Fluctuation*

I must add a word on the temporary fluctuations exhibited in all three curves.

These fluctuations can be claimed to be genuine ones, if we can have confidence that the basic records on which the analysis is based are of high quality and contain only a minimum of error. Some familiarity with international demographic data soon reveals the high quality of the New Zealand vital statistics, on which this information is based.

It is perhaps not too fanciful to speak of a specific degree of vitality of an individual cohort that expresses itself in these fluctuations. A similar observation was first made more than thirty years ago with regard to cohort mortality rates by an English actuary who had observed fluctuations of a similar kind in a series of cohorts (in that case, birth cohorts).[7] The point is also made by Professor Medawar. It is an important one because it suggests that we have a closer look at those conditions that may be responsible for these differences. Here I cannot do this question full justice, particularly since it would call for an analysis of cohort nuptiality besides that of cohort fertility. But we can at least go some way in this direction.

9. *Prediction*

Why—one may ask—go to this length? Is this work necessary for a simple observation in the field of what used to be called moral statistics? I should unhesitatingly answer: No, this amount of demographic analysis is not worth the candle, if—repeat: if—no more than this question were at issue: in what proportion of couples is the first child a case of pre-marital conception?

Even for the answer to this question, however, it was perhaps worth our while to demonstrate the general trend of substantial decline in the proportion of pre-marital conceptions in all first order births of

[7] Derrick, V. A. P.: Observations etc. on the changes of mortality, *Journal of the Institute of Actuaries*, vol. 58, p. 117, July 1927.

all married couples—and not only in the first year since marriage. The pre-world war I figure already quoted was 23·4 per cent, and the post-world war II figure 16·8 per cent, a decline by 30 per cent. This fact alone obviously tells us very little, or nothing about the sociological significance of this trend, nor even about the possible extent of changing social mores in pre-marital intercourse.

The problems of trend and of fluctuation appear in a different light, if we consider them in the wider context that I have suggested, that is, the cohort approach. In this context, the pattern of first order births, and among them the incidence of the cases of pre-marital conception, is of particular significance. The point is this.

Let us once more go back to the first of the Reith lectures, where Professor Medawar asked: of what use is cohort analysis for the prediction of the "future of man"? As in some of the geneticist topics with which he was concerned in his later lectures, he seemed more interested in raising than in answering a question. But he did point out correctly the special difficulty we have to contend with, namely, that "cohort analysis can never be completely up to date", for the simple reason that it takes some twenty years for cohort performance to be complete. This lack of up-to-dateness seems to indicate that cohort analysis is of relatively little use. And it is true that so far cohort reproduction rates have nowhere as yet been employed in popular projection.

But employed it will be for that purpose. The cohort approach was, as an instrument of demographic analysis, adopted at least in the United States in the definite hope of finding in it a tool for projection of future population that would be superior to the older reproduction indices of the cross-section type. The new tool of cohort analysis is still being tested here and there for what can be achieved by its use, and one should grant that, in a short history of some twenty years, we shall learn to handle it also for purposes of prediction.[8]

This task might be solved if one could sort out those factors that can be proved to be early indicators of probable completed fertility. These early pointers are:

(i) the formation of the marriage cohort itself, that is its actual as compared with its expected size, which may tell us something about its vitality potential,[9] and

(ii) the very first children in each marriage belonging to one such cohort of women married at the same time, which may tell us something more about that vitality.

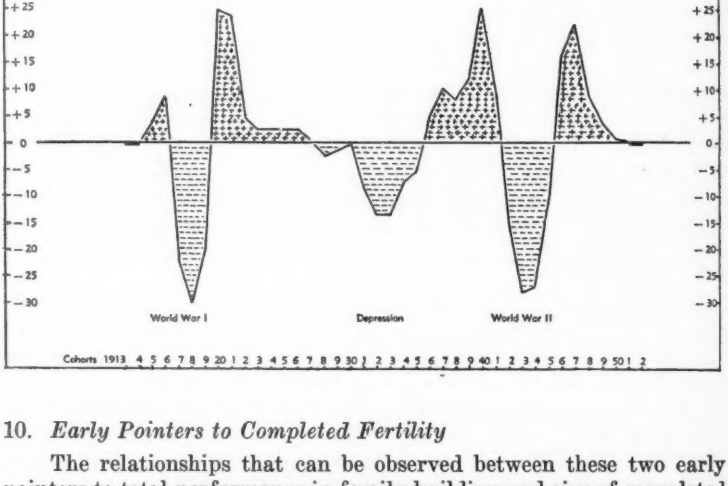
[8] I have since learnt of the first exercise of this nature by Whelpton for United States data. See Freedman, R., Whelpton, P. K., and Campbell, A. A.: *Family Planning, Sterility and Population Growth*, 1959 (McGaw-Hill, New York), especially ch. 10 and Appendix G.

[9] Pending a more comprehensive cohort nuptiality analysis which is now in progress, the point may here be illustrated by Diagram II, previously published, to give a rough measure of the differences between actual and expected cohort sizes standardized to a uniform base line.

For the second of these two early pointers, our best information is of course that of first order births within less than eight months since marriage. For this information we have to wait not twenty years but less than one year to be available.

FIGURE II:

Actual Size of Initial Marriage Cohorts Compared with Expected Size Standardized



10. *Early Pointers to Completed Fertility*

The relationships that can be observed between these two early pointers to total performance in family building and size of completed family may, in conclusion, be briefly outlined. Both the formation of the cohort, and the earliest of the first order births, are of course a matter of timing and as such, though deliberate acts of individual couples, of the greatest sociological significance. If we can interpret these relationships correctly, they will help us to distinguish temporary fluctuation from long-term trend, and this alone is worthwhile. For it was the insufficient power of cross-section reproduction indices to discriminate between temporary fluctuation and long-term trend that had rendered those indices unsuitable as reliable tools for prediction (if I may compress in one brief sentence the gist of the whole sad story of attempts at population projection based on net reproduction rates). Therefore, if we can mark out clearly what are temporary fluctuations in cohort formation and in the first phase of family building, and what are not, we would get a clearer view of long-term trend —perhaps not in splendid isolation but sufficiently definite to enable us to spell out more realistic assumptions on the future direction of trend.

I select from the forty New Zealand cohorts which we can study (1913-1952) the following instances of the relevant relationship.

(1) The depression years (1930-1935) have markedly smaller than normal-sized cohorts because many intending couples postponed marriage. At the same time, those who did get married, that is, the cohorts as we have them for those years, reveal a high incidence of pre-marital conception among first order maternities. The eventual performance for all first order births is also higher than for the cohorts of the middle and late twenties, and their family size shows a similar recovery (see table 1 above).

(2) The cohorts of the post-depression years, and immediately following them, the cohorts of the first two war years (1937-1941) are considerably larger in size than one would expect had things been normal. They include among their number (i) some previously postponed marriages, and (ii) some anticipated marriages, that is, those that had it not been for the war would normally have taken place later. All these unusually large-sized cohorts reveal a relatively low incidence of pre-marital conception, even after allowing for a general trend of decline in proportion.

These two examples suggest the reverse to a positive association between our two factors: initial cohort size and incidence of pre-marital conception. A rank correlation (which is a fairly crude measure of this association) for all forty cohorts of these two variables gives a negative coefficient which is probably significant (the figure for g is — ·225).

If we can use these early pointers of cohort formation and cohort fertility to discriminate between temporary fluctuation and general trend, I would conclude that we have succeeded in fitting a vital piece in the jig-saw puzzle of demographic analysis.

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Wellington

THE ORIGINS OF MODERN ECONOMIC THEORY

Hear, O ye kings;
Give ear, O ye princes;
I, even I,
Will sing unto the Lord.
DEBORAH'S SONG.
(*Judges 5, 3*).

I.

The present paper will show that the beginning of modern economic theory in the Western world can be dated back with precision to the year 1202 A.D. The limitation to Europe, however, is important. If the search were extended to Oriental records, and if those who undertook it were quite clear in their minds as to what they should look for, then there is very good reason to believe that even this early date, given for Europe, might be pushed back several millennia. A calm assertion of such sweeping nature, which runs contrary to pretty well all that our best histories of economic doctrines would lead us to expect, is naturally in danger of being dismissed off-hand as unbearably presumptuous. I shall have to take good care, therefore, to explain precisely how I propose to prove the point.

I begin by registering my complete agreement with Schumpeter that "as regards economics, bias or ignorance alone can explain such statements as that A. Smith or F. Quesnay or Sir William Petty or anyone else 'founded' that science, or that the historian should begin his report with one of them".[1] And when he asserted that "the history of economic thought starts from the records of the national theocracies of antiquity whose economies presented phenomena that were not entirely dissimilar to our own, and problems which they managed in a spirit that was, in fundamentals, not so very dissimilar either"[2], I consider that he was definitely on the right trail. Regarding the methodology of the history of economic doctrines I agree further with Schumpeter that the emphasis should lie on *analysis* rather than on general philosophy. But I shall contend, and prove, that he grossly underestimated the richness in analytical content of the Mesopotamian contribution. When after a lifetime of research he concluded that "the history of economic analysis begins only with the Greeks"[3] he lost, unfortunately, a promising trail that to a considerable extent he had blazed single-handed.

This mishap is all the more disappointing as Schumpeter must have been well aware of the fascinating process of cultural diffusion by which the Brahmi and Gobar numerals (those important vehicles of commerce) eventually reached the Western world.[4] Their very name

[1] Joseph A. Schumpeter, *History of Economic Analysis* (1954), p. 9.
[2] *Loc. cit.*, p. 52.
[3] *Loc. cit.*, p. 52.
[4] D. E. Smith and L. C. Karpinski, *The Hindu-Arab Numerals* (Boston, London, 1911). K. Menninger, *Zahlwort und Ziffer*. B. L. van der Waerden, *Erwachende Wissenschaft: Agyptische, Griechische und Babylonische Mathematik* (Basel and Stuttgart, 1956).

today, "Arabic" numerals, recalls the fact that this process completely by-passed the world of classical antiquity. And historians of mathematics leave us in no doubt that the same is true for important branches of their discipline, algebra and compound interest being the most noteworthy. They have been remarkably successful lately in sorting out the different strands in this tangled web of acculturation.[5] And they agree in pointing to the famous

Liber Abaci
compositus a Leonardo
filio Bonacci Pisano
in anno 1202

as the most outstanding landmark by way of which Oriental learning has filtered into Europe.[6] Yet Leonardo Pisano is not even mentioned in Schumpeter's encyclopaedic researches.

In economic literature, however, one will find occasional scattered references. It is mentioned that Pisano played an important role in the introduction of Arabic numerals from Barbary into Italy, though actually he was preceded in that step by Gerbert d'Aurillac who became Pope Sylvester II two centuries earlier.[7] The importance of Pisano's computational techniques for the development of double-entry book keeping and other commercial practices is stressed every now and then.[8]

[5] For a quick orientation see Dirk J. Struik, *A Concise History of Mathematics* (London, 1956). E. T. Bell (*The Development of Mathematics,* 1940, p. 49) says tersely: "Marathon and Salamis are universally acclaimed by partisan humanists as unmixed benefits for the development of civilised culture. The career of mathematics hints that they may have been the beginning of a long detour round the origins of much that today is more vital than some of the Greek masterpieces."

[6] *Il Liber Abaci di Leonardo Pisano,* (Baldassare Boncompagni, Rom, 1957).

[7] C. W. Previté Orton credits Gerbert with the re-introduction of the abacus. Cf. *The Shorter Cambridge Mediaeval History* (1952), I p. 620. This is most unlikely. There is no evidence that such a common implement of shopkeepers as the abacus ever became lost in the decay of the ancient world. B. L. van der Waerden (*loc. cit.,* p. 96) reproduces from Menninger (*loc. cit.*) Gerbert's abacus with its characteristic "apices" and points out that the "cabbalistic symbols" are merely the Western-Arabic numerals which here for the first time make their début east of the Pyrenees. It would seem safer, therefore, to interpret Gerbert's problematic effort as a pedagogic attempt at explaining to habitual users of the abacus the secret of the positional values of the Indian numerals. Note that the sketch has been preserved by one of Gerbert's pupils.

[8] Leonardo Pisano's influence on book-keeping before Pacioli is briefly discussed in A. C. Littleton and B. Yamey (jt. eds.), *Studies in the History of Accounting* (1956). There is also a biography of Fra Luca di Borgo-Pacioli whose *Summa de Arithmetica, Geometria, Proportioni e Proportionalità* (Venice, 1484) deals in one chapter with double-entry book-keeping and seems to be the earliest extant printed text. Pacioli, who very modestly says that he owes all to Leonardo, became through his printed books the main vehicle by which the knowledge of Pisano's art was rapidly disseminated.

See also D. Struik (*loc. cit.,* p. 103 f, 110) who reproduces Jacopo de Barberi's famous picture of Pacioli in Naples.

Interesting material concerning early commercial arithmetic is to be found in W. Sombart, *Der Bourgeois* (1923), and *Der Moderne Kapitalismus* (1928); also Florian Cajori, *History of Elementary Mathematics* (New York, 1910); D. E. Smith, *History of Mathematics,* (1925), particularly in volume II.

We learn of his "account of the various coins and their values, as well as of the different weights and measures used . . . at the principal cities of Italy".[9] But I can recollect only one occasion when the importance of Pisano's work for economics was the subject of detailed discussion among economists.[10] It was a most delightful episode in German academic polemics and deserves to be recorded here as a digression.

The occasion arose in 1902 when Werner Sombart, vigorously pursuing the Marxist fantasia of "original accumulation", tried to furnish historical evidence for his well-known but unconvincing thesis that mediaeval trade could not possibly have provided the funds required for a self-sustained take-off of capitalistic development. Ninety per cent of all merchants, he contended, would have been happy in those days if they earned enough to feed their families; the true state of affairs, he suggested, was vividly revealed by the following episode recorded in the *Liber Abaci*.

> A man travelled to Lucca for business, doubled his capital and spent twelve denarii. From there he proceeded to Florence, again doubled his capital and spent the same amount as in Lucca. And when he returned to Pisa he doubled his capital once more; but after having paid another twelve denarii for the last leg of the journey he, found that his purse was empty.

Thus Sombart.[11]

A little later Lujo Brentano pointed out amidst great hilarity

(a) that Pisano's story was not a tale of some trader's lamentable failure, but a "problem" culled from a textbook of commercial arithmetic;

(b) that the data of the problem made it quite clear that the merchant could have profited handsomely, had he had the wit to start on his journey with somewhat more capital than the pittance of 10 1/2d.;

(c) that evidently Professor Sombart had proved to be a far less able pupil of the master than Pisano's contemporaries who understood only too well the very capitalistic moral of the story—that a *poverino* is no capitalist and had better stay at home.

In the sequel Sombart, duly chastised, quietly withdrew Pisano's story from subsequent editions of his magnum opus.[12] But neither Brentano nor, as far as I know, anybody else seems to have paid further attention to this superb example of mediaeval commercial

[9] Palgrave's *Dictionary of Political Economy* (1910), Art. Fibonacci.

[10] Lujo Brentano, *Handel und Kapitalismus* (reproduced as Sect. IX of his collected addresses and essays—*Der Wirtschaftende Mensch in der Geschichte* (Leipzig, 1923), pp. 316 ff, 324, 429.)

[11] Werner Sombart, *Der Moderne Kapitalismus* (München und Leipzig, Ed. 1902), I, p. 392.

[12] See Brentano's comment, *loc. cit.*, p. 429.

arithmetic. And that is a pity, because there is more in the innocent little story than meets the eye.

Let us examine its *analytical* content.

II.

Let y_o be the initial capital which the merchant invests in Pisan goods with the intention of selling them in Lucca. Assume uniform costs of the journey from one market to the next and denote them by c. Let q be the factor by which capital is increased at each fair. Finally, instead of Pisano's three stages, let there be n stages in the circuit.

Then the financial results terminating the visit of each of the n fairs are successively.

$$y_s = qy_{s-1} - c \quad \text{for } s = 1, 2, \ldots n \quad \ldots \quad \ldots \quad (1)$$

And the final revenue in hand, after completing the circuit and eliminating the intermediary results, is

$$y_n = q^n y_o - c(q^n - 1)\,(q - 1)^{-1} \ldots \quad \ldots \quad (2)$$

Had he been more thrifty our merchant need not have returned empty-handed to Pisa. How much could he have earned?

If we define his profit (P) simply as the difference between the final revenue and the capital costs of the investment, the rate of return per unit of invested capital becomes

$$R = P/y_o = (q^n - 1)\,(1 - c(q - 1)^{-1}y_o^{-1}) \ldots \quad \ldots \quad (3)$$

On Pisano's reckoning with the numerical values $q = 2$ and $n = 3$, a profit of up to 700% could have been obtained. But no more. Because R tends, with increasing initial capital, to the upper limit $(q^n - 1)$ and obviously "decreasing returns" apply. The marginal rate $\partial R/\partial y_e$ is always positive, but it decreases steadily: $\partial^2 R/\partial y_o^2 < 0$.

I submit that this obvious implication of Pisano's story is not without interest for the history of economic doctrines. The current tradition of tracing "The Law of Decreasing Returns" back to England's troubles[13] in 1814, or, less provincially, to dubious inductions from legendary agricultural observations which, in fact, nobody seems to have recorded, is prima facie unsatisfactory. Could it not be that neither common or garden experience nor deliberate searching trials have initiated this idea, but that it germinated rather from the simple corollorary of compound interest which is embodied in equation (3) above?

This surmise gains in weight when one considers that our merchant might well try to counteract the tendency of decreasing returns by visiting further markets, i.e. by "wisely extending the length of his round-about way" as the classical formulation succinctly puts it. And the number of fairs visited may serve here obviously as an index of the *time* it takes to complete a circuit. The partial derivative $\partial R/\partial n$

[13] Cf. E. Cannan, "The Origin of the Law of Diminishing Returns," *Economic Journal* (March, 1892).

is positive and means that, as long as similar markets are available, any extension of the "period of investment" is "productive".

Decreasing returns counterbalanced by the greater productivity of longer round-about ways, however, are the characteristic tenets of Böhm Bawerk's capital theory. There cannot be the slightest doubt that Pisano's little story fully embodies these ingredients.[14]

To measure profit as the difference between final revenue and capital costs, however, implies that the choice which determines the investment decision lies between either going on the round trip, or staying at home and leaving capital safely locked up in a box. Yet, even in its worst moments, mediaeval town-life was never so ridden by restrictions that it could not provide a somewhat wider range of opportunities. So long as no heresy was at stake, the Church was the proud heir of Roman tradition and did not attempt to eradicate commercial usages that were commonplace since immemorial antiquity.

A Pisan merchant could easily obtain quite legitimately a price $p = 1 + r$ (r being a rate of interest) by lending a unit of money for a unit of time. Within the circle of "brethren", it is true, this price was officially controlled. Spiritual authorities tried to keep it for mere loans (*mutuum*) rather ineffectively at the level $r = 0$. But the merchant *could* do better. He merely had to go, for example, to the foreign concession quarter, the *borghetto* (= ghetto ?), where the alien traders dwelt. For is it not written in The Book: "Unto a stranger thou mayest lend upon usury"? (Deuteronomy XXIII, 20). And this was binding law to Gentiles and to Jews alike.[15].

[14] E. von Böhm Bawerk, in his painstaking *Geschichte und Kritik der Kapitalzins-Theorien* (1884, 4th ed. 1921) = *Capital and Interest* (1959), vol. I, remained quite unaware of his illustrious predecessor. Yet it will become clear below that Pisano's story runs like a red thread through all these discussions from St. Thomas Aquinas onwards.

Recently the equations of Pisano's example have been named "The Ramsey Model". Cp. Robert Dorfman, Paul A. Samuelson, and Robert M. Solow, *Linear Programming and Economic Analysis* (1958, pp. 266 ff.). While historically somewhat misleading this new appellation is not altogether without merit. It would seem duly to commemorate how Frank P. Ramsey (of whom we learn on p. 266 that he was a "protegé" (sic!) of Keynes) actually succeeded by means of his thoughtful and stimulating paper, "A Mathematical Theory of Saving," (*Economic Journal*, 38: p. 543, (1927)), in transmitting Fibonacci's influence to the Marshalleans—a feat which Böhm Bawerk and Wisksell had failed to accomplish.

[15] The whole of the highly explosive dynamics of culture contact is lost, if one tries to see the mediaeval discussion of usury against an artificially constructed background of a desiccated, homogeneous feudal society consisting of self-sufficient manors with, perhaps, an odd Jewish pawn-broker thrown in here and there as a concession to reality. The real situation in the towns of Italy and the Levant during the crusades is exceedingly well described by Lujo Brentano, (*loc. cit.*). Any amount of evidence supplementing this clear-cut picture the reader will find in the monumental *Social and Religious History of the Jews*, by Salo Wittmayer Baron, (1937, 2nd ed. 1952). By virtue of their religious organisation, their law, and their language which carried them easily through the interstices of feudal society from Scotland to China, Hebrews in the diaspora formed a most important group acting as intermediaries between the high standard of living area of the Islamic East and the politically disintegrated and underdeveloped areas of the West.

Some fascinating material is collected in *The Legacy of Israel* (Jt. editors I. Abrahams, E. R. Bevan, and Charles Singer, Oxford, 1927). One only has to

Doctrinal difficulties arose only in business with co-religionists, as the passage quoted continues: "Unto thy brother thou shalt not lend upon usury". And even these were not insurmountable to the commonsense and theological ingenuity of St. Thomas Aquinas, St. Bernardino da Siena, St. Antonin (il Forciglione), and their illustrious successors.[16] Naturally there was also the fear (not altogether unknown today) that commerce with unbelievers might entail dire perils for the salvation of the soul, but Church and Synagogue alike were equipped with a formidable array of remedies against the terror of ritual pollution.

In these circumstances we had better allow Pisano's merchant to assess the financial success of his projected journey by reckoning "opportunity costs", i.e. by measuring profit either as

$$y_n - y_0 p^n, \text{ or by its "discounted value" } y_n p^{-n} - y_0,$$

or by some similar comparison. There is no reason to believe that Pisano's pupils among the leading princes, bankers, and merchants of the time did not in fact do so. How else could they have claimed the *damnum emergens*, the *lucrum cessans*, the *periculum sortis*, or any of

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see the pictures of the proud synagogues in Toledo, in Trani, in Worms, or Albrecht Altdorfer's drawing of the temple in Ratisbon (Reginsburg) before its destruction, in order to realise that the popular image of a miserable, pawn-broking ghetto merchant is a sorry caricature of the "Court Jews" who were called and commissioned by princes secular and ecclesiastic, as foreign experts, financiers, and promoters of progress. It is surely not difficult to imagine what Abraham of Lincoln's romanesque palazzo must have looked like (cf. *loc. cit.*, p. 298) among the wattle and daub of the indigenous. The squalor of the mediaeval ghetto shows merely the end stage of a residential district that has come down and turned into a slum through overcrowding by a very fertile segregated group.

For a readable survey of cultural and political life in Italian towns see also Yves Renouard, *Les Hommes d'Affaires Italiens du Moyen Age* (Armand Colin, Paris, 1949). Analogous conditions in Flanders are brilliantly described by Henri Pirenne, *Mediaeval Cities*, (1925).

Finally the role of the Byzantines must not be forgotten. Cf. H. W. Haussig, *Kulturgeschichte von Byzanz* (Stuttgart, 1959); and G. Ostrogorsky, *History of the Byzantine State* (Oxford, 1956).

[16] Cf. Edgar Salin, *Geschichte der Volkswirtschaftslehre* (Bern, Tübingen, 1951), ch. iii. A very skilful and readable exposition of the question is given by Father Thomas F. Divine, S.J. in his *Interest*, an historical and analytical study in economics and modern ethics (Milwaukee, 1959). See also J. T. Noonan Jr., *The Scholastic Analysis of Usury* (Cambridge, Mass., 1957) and B. W. Dempsey, *Interest and Usury* (1948).

It would seem likely that the stubborn policy of the mediaeval Church in matters of usury was not so much determined by mere doctrinal considerations, but rather by reasons of state and of defence, including magic defence. Look at the terrible panels of Paolo Uccello's "Desecration of the Host" in Urbino! The history of the Cathari, the Albigenses, the Waldenses, the Lombardi, the Brethren of the Free Spirit, the Lollards, the Hussites, *et al.*, shows again and again that traders, migrant artisans, doctors, itinerant preachers, minstrels, etc., were the channels through which the dreaded heresies spread. After all, this welter of sectarian cross-currents really did explode eventually in the Reformation.

Baron (*loc. cit.*) has many pertinent examples. See also L. I. Newman, *Jewish Influence on Christian Reform Movements* (New York, 1925). An interesting case for a surreptitious infiltration of Gnostic and (Saivaite) Indian influences is made out by Wilhelm Fränger in his interpretation of the Millenium of Hieronymus Bosch (1957), which would seem to have a counterpart in the exquisite art of the Surya temples in Orissa.

the other titles that made it lawful in the ethical teaching of the Schoolmen to part with liquidity for a price?

Consider now the function

$$E(p) = y_n p^{-n} \quad .. \quad .. \quad .. \quad .. \quad .. \quad (4)$$

which describes how the "present value" of the expected revenue depends on what we might well call the "bank rate". In modern parlance we would speak of the "investment demand curve" for the particular kind of enterprise that we are here considering. It is a perfectly normal Walrasian demand function, downwards sloping to the right, and its only peculiarity lies in that the Marshallian elasticity of this demand

$$\epsilon = -(dE/E)/(dp/p) = n \quad .. \quad .. \quad .. \quad (5)$$

turns out to be not a dimensionless number, but a time.

This is a general property of investment demand curves, but to the best of my knowledge it has been noticed in the literature only as late as 1939. J. R. Hicks briefly commented on the phenomenon in his *Value and Capital*,[17] evidently finding it surprising. It is in fact a most useful observation which will come in handy when we consider next another slight generalisation: the problem of valuing durable capital goods.

We had better consider this problem too, as usury is, of course, not the only alternative investment open to Pisano's merchant. He could build a house and let it, he could realise a most cherished dream of members of his class, acquire landed property and live respectably on rents. He could in a remarkable variety of ways invest his initial capital y_o to acquire rights to some income stream well spread over time. Denote by x_t the instalment that he expects to accrue to him at the time t, $(t = O, 1, 2, \ldots N, \ldots)$. The horizon (N) of his expectations may well be short under conditions of mediaeval uncertainty, but he would definitely reckon with some $x_t > O$ for $t \leqslant N$. That beyond this range $x_t \equiv O$, his Church would impress upon him with relentless insistence. And governments, we may assume, had not acquired as yet the audacity of marketing the fiction of perpetuities. Thus our new assumptions remain well within the restricted circle of mediaeval experience.

In order to make up his mind under these circumstances the merchant would have to have quite a formidable knowledge of modern economic theory. Evaluation of the contemplated purchase requires at least some rudimentary idea of the "marginal efficiency of capital" in that sort of business, i.e. of the "schedule"

$$E(p) = \sum_{t=O}^{\infty} x_t p^{-t}, \quad .. \quad .. \quad .. \quad .. \quad (6)$$

using the fashionable names that Keynes has introduced. Again this is merely a well-behaved Walrasian demand curve, convex downwards as

[17] J. R. Hicks, *Value and Capital* (1939), pp. 187, 217 ff.

$dE/dp < 0$, and $d^2E/dp^2 > 0$. But somewhat tedious computational headaches may arise, if the time distribution of the expected income stream is somewhat erratic. These can be avoided, however, if for his practical purposes the merchant merely cares about the response of the function to interest within a certain limited range, in the neighbourhood of some fixed value p_o, say, which could be the "normal level" of the rate. Then there is no difficulty in designing various approximation formulae $F(p)$ such that, for $p = p_o$, these approximations have the same value and the same elasticity as the more complicated function $E(p)$. We shall produce here two such formulae: $F_a(p)$ and $F_b(p)$.

For this purpose we introduce the "instantaneous rate of interest" (ρ) by means of Euler's famous transformation $p = e^{\rho}$, letting $\rho_o = \log p_o$. One sees at once that

$$F_a(p) = E(p_o)e^{-(\rho - \rho_o)\epsilon_o} = E(p_o)/(p/p_o)^{\epsilon_o} \quad .. \quad (7)$$

satisfies the two conditions, because this function has for all interest rates a constant elasticity ϵ_o, and obviously $F_a(p_o) = E(p_o)$. Only two constants have to be computed: the normal value $E(p_o)$, and the value of $-(dE/E)/(dp/p)$ for $p = p_o$ which is the required ϵ_o. With the use of tables of discount this is a simple routine. Note that ϵ_o is the limit for $p \to p_o$ of an "average period" of Böhm Bawerkian fame—and this is the essence of Hick's observation.[18]

Another possible approximation is

$$\begin{aligned} F_b(p) &= \epsilon_o^{-1}E(p_o)\ (\epsilon_o^{-1} - \rho_o + \rho)^{-1} \\ &= E(p_o)/(1 + \epsilon_o \log (p/p_o)) \quad .. \quad .. \quad (8) \end{aligned}$$

The two constants $E(p_o)$ and ϵ_o have here the same meaning as before, but the elasticity

$$\begin{aligned} -(dF_b/F_b)/(dp/p) &= (\epsilon_o^{-1} - \rho_o + \rho)^{-1} \\ &= \epsilon_o/(1 + \epsilon_o \log (p/p_o)) \quad .. \quad .. \quad .. \quad (9) \end{aligned}$$

varies now inversely with the rate of interest, and this is a slightly more general hypothesis.

We note in passing that for $p \to p_o$ the two formulae F_a and F_b merge into one another asymptotically. Their simultaneous use, therefore, should not lead to conflict. The choice of a hypothesis regarding the dependence of the elasticity of demand on interest rates remains arbitrary and is, of course, a matter of convenience.

This observation is historically important, because it clarifies the issue that has been bitterly fought over in capital theory by F. H. Knight and his school on the one hand, and economists of Austrian leanings on the other.[19] The approximation (7) in fact embodies K. Wicksell's famous solution of the generalised problem of valuing durable capital goods. Dissatisfied with Böhm Bawerk's cumbersome

[18] Cf. H. Bernardelli, The Missing Key, *The Economic Record*, August, 1960.

[19] A general bibliography of the controversy is given by N. Kaldor in the "Annual Survey of Economic Theory", *Econometrica*, 1937.

exposition, he succeeded eventually, by means of this elegant approximation, in reducing the issue formally to Pisano's old problem.[20] A comparison with equation (4) above will make this clear when the relations (6) and (7) are restated thus:

$$F_a(p) = F_a(1)p^{-\epsilon_o} = (\Sigma x_t p_o^{\epsilon_o - t})\, p^{-\epsilon_o} \quad .. \quad .. \quad (10)$$

In (10) obviously the time ϵ_o takes the place of the old index n measuring the length of the round-about way, and the accumulated value $F_a(1)$ replaces the solitary, final revenue y_n which matures at the date n.

Knight, on the other hand, argues in a manner that can best be explained in terms of our formula (8). He insists in measuring the value of any given business proposition as the value of an equivalent perpetuity. There can be no objection to this procedure, but the claim to have eliminated thereby the old period concept (which is anathema to him) cannot be sustained. Inspection of equation (8) shows at once that a knowledge of ϵ_o remains indispensable. But Knight is correct in reading a formula such as (8) as that of an "eternal rent". It has the intensity $\epsilon_o^{-1}E(p_o)$, and Knight agrees that such a rent has to be discounted not at the ruling market rate (ρ), but at a "correct rate"—corrected among other things for depreciation.[21]

It follows that Pisano's merchant need not worry unduly about such controversies among modern economists, though he might well feel that Knight's theory has a distinctly "protestant" ring and attacks the fundamentals of his faith. Living in the Dark Ages, benighted by superstitions which the Revolutions of Science, Enlightenment, and Progress have not yet cleared away, the merchant would presumably think it blasphemous to describe his humble calling in terms such as the following: "Every economically active person must constantly apportion productive capacity under his control between use to yield a larger current stream of want-satisfying services and the maintenance, improvement or creation of productive agents with a view to a larger flow of such services in the future, or still further investment". The mere idea of unvarying or increasing income streams *in perpetuity* would strike him as rank heresy.

Thus he might well turn to another school which also inherited, via Pisano, the Algebra of Al-Khārizmī, i.e. the Activity Analysts who would advise him to solve more flexibly the calculations of economic prudence by means of linear programming.[22] It would be easy enough to set up a "technology" matrix composed of the column vectors, $(-y_o, x_o, x_1, \ldots x_n, O, \ldots)$ and $(-y_o, O, O, \ldots y_n, O, \ldots)$, representing his alternative choices, and then to proceed with the accounting prices p^{-1}, p^{-2}, . . . Whether he programs for maximum profit or

[20] K. Wicksell, *Lectures on Political Economy.* (London, 1934), Vol. I, Appendix 2 on Real Capital and Interest (first publ. 1923).

[21] F. H. Knight in *Encyclopaedia Britannia* article, "Capital and Interest"; quoted from *Readings in the Theory of Income Distribution* (1946), p. 394.

[22] Cf. R. G. D. Allen, *Mathematical Economics* (2nd ed. 1959), chs. 17-18. Also C. A. Blyth, *Economica,* May 1960.

minimum costs, whether he aims for the "optimum internal rate of return" or its dual, the "shortest waiting time", would appear to be a technical detail of minor importance. "Time is money" said Benjamin Franklin[23] when he canonised the platitudinarian creed for the New World, and that seems to be about all there is to it.

By now the examination of the *analytic* content of Pisano's charming story should have made one thing abundantly clear to the reader: before he can say Zione Leonardo!, Pisano's merchant finds himself slightly bemused, no doubt, groaning under a load of quite a sizeable collection of standard tools of modern economic analysis, and right in the age of electronics and automation. And here we propose to leave him and let the poor fellow catch some breath while we retrace the logic of our steps and draw some urgent conclusions.

III.

Looking at it from the angle of epistomology, we begin to discern that quite a substantial part of modern economic theory is nothing but a straightforward *mathematical* development of the calculus of compound interest. Some empirical circumstances—to be pedantically precise—enter, of course, into the process of deduction, but only in so far as they suggest which mathematical generalisations are particularly useful and which models might be explored next, when the theory is constructed step by step.

These circumstances are generally trite, commonplace in any society. No fund of profound practical experience, no knowledge of progress and modern capitalism are required to suggest generalising Pisano's specific numerical example in terms of our indeterminate parameters q, c, and n, or extending the definition of profit from a limiting case $y_n - y_o$ to the general measure $y_n p^{-n} - y_o$ in terms of opportunity costs. There is also no human society whose members would not know the difference between a single payment (y_n) and a series of payments well spread over time. The empirical background of the theory becomes interesting only when we turn to such sophistications as Knight's interpretation of "modern business" in terms of perpetual rents. Then we must indeed pre-suppose, sociologically, a set of more specific conditions in which such ideas can become generally acceptable instead of remaining merely "idealisations", obvious only to a few mathematical heretics. However, most of elementary economics, assuredly, is not on that level and thus has a good claim to being valid for all time.[24]

The tools of mathematics that have been used to extract the implications from Pisano's story are modern—naturally, but this is merely a matter of reasonable exposition. Given sufficient time and patience—both on the part of the writer and of the reader—it would have been

[23] B. Franklin, *Advice to a Young Tradesman* (1785).

[24] Cf. Ludwig von Mises, *Epistomological Problems of Economics.* (orig. publ. 1933, Engl. transl. 1960, p. 12). See also his *Human Action, a Treatise of Economics* (1957).

quite feasible to expound the results of the previous pages in Pisano's authentic style, with suitable stories, ample numerical illustrations, and all other archaic expository devices one might care to think of. Ten lines of algebra, however, seemed more economical than another Introduction to Economics. And *logically* the working with efficient tools does not add anything to what is not already contained in the premises.

Now, as far as we know Leonardo Pisano spelled out these premises for the first time in Europe for everyone to read. He may not have had the foggiest notion of what he was leading up to when he composed his little story, he may well have copied it without much thought of his own from some earlier Arabic or Chaldaic writer.[25] Yet, in a strictly logical sense he started in Europe a chapter in economic theory by unmistakably outlining a definite logical structure which leads by implication, among other things, to the various theorems of economics that have been indicated.

We have unfortunately no means of deciding how far he himself saw any of these implications. The mathematical techniques which enable us today to survey the field with ease were certainly not at his disposal and probably, therefore, he did not get very far. One should not underestimate, though, a powerful mathematician's *intuitive* grasp of a system of structural implications. There is good evidence that Leonardo's powers were of a very high order.[26] But we shall never know how far he really penetrated.

The mere fact, however, that he formulated the premises and as a most influential teacher passed them on to others, allows us to draw some definite conclusions. I enumerate:

(i) It should not cause the least surprise to find the works of the Scholastics quite rich in thoughts and pertinent formulations belonging to economic theory. The learned doctors all went to school and arithmetic was part of the *quadrivium*. Manuscript texts, doubtless, were somewhat scarce, but from 1484 onwards Paciolo's *Summa* was available in print.[27] Doing their homework properly, the learned could not fail to tumble upon these problems, sooner or later, and eventually to articulate quite acceptable formulations. In these matters mediaeval and early modern authors need not be praised so much for originality of thought; the history of economic doctrines should rather explain realistically why it took such an unconscionable time for the most primitive economic formulations to mature.

[25] Pisano's Arabic sources are mentioned by Struik (*loc. cit.*, pp. 95, 103). Baron (*loc. cit.* VIII, pp. 148, 155 ff.) gives also the names of two Spaniards.

[26] Cf. Struik's remarks (*loc. cit.*, pp. 103 ff.). Pisano's problem of "The progeny of a single pair of rabbits" is rightly famous. He reduced it to a second order difference equation and found as solution the famous Fibonacci series. Thus he initiated a new branch of mathematics and became, incidentally, a forerunner of modern population mathematics, far in advance of Malthus' geometric progression and all that. Obviously non-homogeneous first order equations, such as our (1) above, were chicken feed to him. For a penetrating discussion of this problem, see Lancelot Hogben, *Mathematics in the Making*, (1960), pp. 165-7.

[27] Cf. footnote (8) above.

(ii) Böhm Bawerk has listed as the main steps to a proper understanding of capital and interest the following four points[28]:

(a) The clear distinction between "originary" interest, and contract or loan interest. (b) The separation of originary interest on capital from the entrepreneur's remuneration for effort. (c) The understanding "that there is loan interest *because there* is originary interest".[29] (d) The explanation of originary interest. Let us check how these steps emerge from Pisano's story.

As Pisano introduces interest (q) without even mentioning the possibility of earning through usury, the clear recognition of the fact of originary interest is there right from the start. Salmasius may well have "succeeded . . . brilliantly in doing what Molinaeus a hundred years before had failed to do, namely to convince his contemporaries",[30] but neither the one nor the other nor, for that matter, any writer after Pisano can be credited with the *discovery* of originary interest.

The second step, the setting aside of an entrepreneurial wage, turns out to be trivial. Suppose Pisano's merchant had an opportunity of earning a wage (w) per period, and had acquired the simple habit of reckoning his costs in terms of lost opportunities. Then, in each round, he would duly deduct his wage from the proceeds, so that equation (1) changes into

$$y_s = y_{s-1}q - (c + w), \qquad s = 1, 2, \ldots n \ldots \quad \ldots \quad (11)$$

Formally there is not the slightest difference between the two expressions: entrepreneurial remuneration is on the same footing as travelling expenses, and we have no reason to suppose that when visiting fairs Pisano's merchant did not have his full share of fun.

It is a pity that historians cannot interview the business friends whom Pisano's merchant used to visit in their borghetto. Could one still inquire from these Orientals why they paid a price, p, for a loan received, one would doubtless learn that theirs was an ancient custom, and hear voluble arguments to the effect: "As something can everywhere be made by the use of money, something ought everywhere to be paid for the use of it"[31]—six hundred years before Adam Smith put this in print and thereby qualified for grade (c) of Böhm Bawerk's examination. And as for grade (d), the explanation of originary interest, what could be clearer than Pisano's reference to such obvious facts as that some Pisan goods sell well in Lucca, some Luccan specialities find a ready market in Florence, and Florentine craftsmanship commands a high price everywhere. Has Turgot, has Böhm Bawerk, has Jevons, has any other economist done more than point to such differentials in space and time?

(iii) The gradual development of a "rational" attitude to economic problems can perhaps best be explained if we use a clue contained

[28] *Loc. cit.*, pp. 6-23.
[29] *Ibid.* p. 37.
[30] *Ibid.* p. 24.
[31] Adam Smith, *Wealth of Nations*, Book II, ch. iv.

in Heinrich Hertz's famous remark: "It seems as if the mathematical implements we use are wiser than we, and perform their evolutions independently of our will." Surely, Böhm Bawerk's question why originary interest is possible, and how in turn it makes loan interest possible, was completely answered when some ancient mathematician—deeply concerned, presumably, with the mysteries of some fertility cult—meditated upon the "law of organic growth" and began *tabulating* functions such as $y_n = q^n(y_o - c/(q-1)) + c/(q-1)$ on the one hand, and functions such as $p^n y_o$ on the other, and investigated their ratio.

Now precisely this appears to have happened in ancient Mesopotamia.[32] There is reason to believe that such tabulations were already performed by Sumerian priests. In any case, the powerful priesthood of Babylon appears to have appreciated fully the mathematical "rationalisation" of the ancient miracle of fertility. To the greater glory of their Gods these priestly kings began to organise the spiritual and economic life of their subjects systematically in accordance with their newly gained insight. "In view of the highly developed economic life of ancient Mesopotamia", says Otto Neugebauer, "it is not surprising to find mathematical texts concerned with weaving, with sheep, with grain measures and with the value of silver and precious stones". But here we also "find the use of tables . . . for an exponential function and its inverse. We know that compound interest was computed exactly as it is in schools today." "The vast majority of the tablets were written in the Old Babylonian period (about 1800 to 1500 B.C.); the remainder belong to the period of Greek and Parthian rule over Mesopotamia after 300 B.C. The extant material suffices to establish the continuity of tradition through this millenium and a half."[33] Clearly one cannot unravel the history of economic doctrines without a close study of the history of mathematics and its cultural setting.

[32] For a modern survey of the Mesopotamian scene and the subsequent cultural diffusion see *Histoire Générale des Civilisations* (gen. ed., Maurice Crouzet), Tome I, *L'Orient et la Grèce Antique*, par M. André Aymard et Mlle. Jeannine Auboyer. (Paris, 1957).

We are surprisingly well informed about economic life in later Babylon. A kind fate has preserved intact business records, dating from the 5th and 4th centuries, of Murashu and Sons, a prosperous concern of "loan sharks" in Nippur. Cf. *Cuneiform Texts*, ed. by H. V. Hilprecht and A. T. Clay (Philadelphia, 1898, 1904). Then there are, still earlier, some extensive records of a bankhouse Egibi and Sons. For discussion and further references see Brentano (*loc. cit.*, p. 205) and S. W. Baron (*loc. cit.*, I, pp. 102 ff.). Baron gives a vivid account of how the Jews in exile were fitted by their masters into the Babylonian temple economy, of how they adjusted their laws, and how eventually they prospered, particularly when Cyrus, the Persian, took over. He makes the interesting suggestion: "Perhaps because of their strong religious biases the exiles may have helped to secularise banking and thus pioneered on the uncharted seas of private monetary transactions." (*loc. cit.* I, p. 132). Numerous references are given by Fritz M. Heichelheim, *An Ancient Economic History*, vol. I, (Leiden, 1958), pp. 431 ff. On p. 432 Heichelheim refers to Henry Frankfort and A. Schott for specific evidence of the connection between compound interest and fertility worship.

[33] Cf. O. Neugebauer, *A History of Technology* (Oxford, 2nd ed. 1955, jt. ed. by Singer, Holmyard and Hall) I, pp. 787-793.

(iv) Böhm Bawerk came amazingly close to seeing all this. When he wrote: "For fully two thousand years the nature of loan interest had been discussed and theorised on . . . It is easy to see why this should be so. The thing about interest that specially challenges our attention is its effortless genesis from a mother wealth, which seems to have the power of procreation",[34] he puts his finger right on the crucial issue. But then he spoiled the clarity of his profound vision by the obsessional and utterly improbable notion that, all through the millennia, the more fundamental issue of originary interest had been lying dormant, waiting to be properly explained by Böhm Bawerk—some acknowledgements to a handful of forerunners being understood.

All archaeological evidence, however, goes to show that the ancient priesthoods were very much concerned with originary interest. Their purposeful, disciplined efforts to wrest from the Gods by magic and economics the miracle of fertility were truly gigantic. And the documents of ancient mathematics show that the simple way by which the category of orginary interest arises from equations such as (1) above had not eluded them, as it appears to have eluded Böhm Bawerk. The simple explanation for his obsessional blindness seems to lie in the sorry fact that he did not learn Pisano's lesson properly.

IV.

The calculus of compound interest can be applied to situations of ever increasing complexity. There is obviously no limit to such extensions. In Pisano's example the assumption that the merchant may extend *ad lib.* the length of his circuit, or the amount of his capital, without affecting the parameters q and c, may be replaced at once by more realistic assessments of the potentialities of his trade.[35] There is no need even to interpret the mathematical structure posed by such equations in terms of only a pedlar's or a banker's world. If the terms of the series $y_1, y_2, \ldots y_{n-1}$ are interpreted as values of intermediary products which by stages gradually ripen into goods for final consumption, then the plans of peasants making cheese, wine, or what have you, come into the picture as well as those of manufacturers and producers of every kind and description. Nor is there a class bar: the plans of feudal lords living by warfare, exploiting peaceful subjects, seigneurial mines or forests, and those of ecclesiastic or secular corporations thriving on extensive estates of one kind or another, are likewise not excluded.

It is to be surmised then, that not only a small and insignificant chapter of modern economic theory can be derived in this manner, but

[34] *Loc. cit.*, p. 8.

[35] If it is stipulated that the markets are gradually satiated by the goods which our merchant carries, if it is assumed e.g. that q is a function of the form a/y_b^0, and a and b positive constants $(2 > b > 1)$ then one obtains immediately the constructions which have been Wicksell's starting point. Cf. his *Value, Capital and Rent*, pp. 120 ff. Such nonlinear adjustments of Pisano's story are lucidly discussed by Dorfman, Samuelson and Solow, *op. cit.*, pp. 271 ff.

rather the bulk of the "system". In fact, the relevant question would appear to be: what has modern economic theory got to offer which cannot be so derived? Leaving aside the higher flights of the edifice where economists counsel on welfare, progress, and the brotherhood of man, and disregarding the ornaments of "utilitarian psychology" —which seem to serve mainly for improving the moral tone and for making less dismal the supposedly dismal look of bare economic calculus—I should think there are few parts of the theory that cannot be reached.[36] There is a clear line of development from the humble calculus which Pisano inaugurated to the powerful methods of algebra, set-theory, the geometrical properties of multi-dimensional convex bodies, and all the rest that lately mathematics has put at the disposal of the practical art of decision-making. Computing compound interest is no longer the only analytical tool available for the description and comparison of plans and targets, and study of the compatibility of demand and supply schedules constituting a market system is no longer the only way of separating attainable targets from uneconomic schemes. Economists have now at their disposal more powerful methods than "comparative statics" for finding out which "alterations of data" are required in order to bring still further targets within reach.

The invention and development of these analytical tools are recorded *clearly* only in the history of mathematics. The records of economic thought are not without interest though, but their history furnishes a rather *blurred* picture of the various strands of analytical development. What they do illustrate and reflect most dramatically are the immense sociological tensions under which these tools were received in Europe, and the subsequent amazing career of the prudential calculus through the turbulent history of the Western world: a fascinating story which tells how it emerged first as a kind of secularised moral theology, then as a spurious inductive science, while all the time it was made to serve as a philosophy for the rising middle classes, and thus had to fulfil not only the simple practical purpose for which it was designed, but also a highly important spiritual function. Naturally these intriguing escapades have left behind a matted tangle of almost unsolvable conundrums, but let it be stated here without ambiguity that the principles of prudential calculus are *not* those principles economists have been quarreling about ever since the beginning of the Liberal Age when their science received the dignified status of a Science.

Prudential calculus proceeds with the axioms of mathematics as

[36] A startling demonstration of how far even the most elementary prudential calculus—as developed in Part II above—will carry is given by L. von Bortkiewicz in his famous paper: Value and Price in the Marxian System. Cf. *International Economic Papers*, No. 2, translating "Wertrechnung und Preisrechnung im Marxschen System," *Archiv für Sozialwissenschaft und Sozialpolitik*, 1907, XXV, pp. 10-11, 445-488. Bortkiewicz manifestly comes right to the threshold of the Walrasian system short of its hedonistic elements and its political intent. The labour theory of value and similar simplifying assumptions enter into the discourse merely because it deals with the ideas of Marx in their Ricardian setting.

its major premises, and among these axioms the economic principle is quite unheard of. To be sure, profit maximisations, minimum effort, or what have you, find a place within the analytical framework, but they enter only accidentally, via minor premises, as ephemeral targets. They belong to the description of the structures which calculus receives as data, or by being hypothetically postulated, and they play no further logical role when calculus proceeds to deduce the implications of these structures *more mathematico* with complete rigour. Naturally economists will tend to select their models for practical purposes, with an eye on such human behaviour as they aim to explain. But "realism" is neither the only, nor even an overruling, consideration. In the framing of hypotheses legitimate claims have to be conceded to economy of means, to possibilities of manipulative ease, and last, not least, to the sheer joy of shaping simple, efficient structures—an aesthetic joy which is such a powerful stimulus in all mathematical creation.

In his recent *Essays on the State of Economic Science,* Tjalling C. Koopmans gives this admirable summary:[37]

> "The theories that have become dear to us can very well stand by themselves as an impressive and highly valuable system of deductive thought. They exhibit in a striking manner the power of deductive reasoning in drawing conclusions which, to the extent one accepts their premises, are highly relevant to questions of economic policy. In many cases the knowledge which these deductions yield is the best we have, either because better approximations have not been secured at the level of the premises, or because comparable reasoning from premises recognised as more realistic has not been completed or has not been found possible."

The odd thing about the state of economics is that such clear descriptions of the obvious procedure of prudential calculus are continuously being challenged by some economists. Why should Koopmans feel constrained to continue the quotation with the query: "Is any stronger defense needed, or even desirable?" Why should certain groups of economists feel that their Science is being endangered by "mathematical methodologists"?

A plea exactly similar to that of Koopmans had already been made in the early years of this century in regard to the content of Pareto's economics. I quote:

> "An economic proposition expresses rational necessity . . . Those propositions . . . are therefore certainly not descriptions, but *theorems* . . . They belong to the kind of mathematical discipline called applied . . . Economic Science then, is a mathematic applied to the concept of human action and to its subspecies. It does not inquire what human action is, it creates formulae for the prompt recognition of the necessary connections.

[37] Tjalling C. Koopmans, *Three Essays on the State of Economic Science.* (1957). p. 142.

> It is not surprising that such propositions examined in their truth appear in one respect arbitrary and in another tautological. But it is not thus that they are examined, and it is not thus that the propositions of mathematics are ever examined, for their value lies solely in the service they render."[38]

However, this was not Pareto's view of the method of his Science. On the contrary, he bitterly resented the assessment given by Benedetto Croce whom we have quoted. As a passionate addict of Positivism Pareto dreamt of something quite different. Pure economics had to be a Science closely akin to *Mécanique rationelle.*

There is no need and no place here to review the memorable exchange between Croce and Pareto,[39] though the issues are well worth re-thinking today. The reader should realise, however, that the quite unwarranted intrusion of metaphysical ideas regarding status and novelty of economic science, which rendered Pareto impervious to Croce's sensible interpretation, is today a formidable stumbling block for historians of economic doctrine. Serious unconformities in the essential continuity of ideas are created in history by the distorting effects of our heritage of heroic legends regarding Rebirth and Enlightenment.[40] These legends are prominent articles of faith in the creed of Scientism (and not only there), and they make it exceedingly difficult to see our linkage with the past in proper perspective. In all social earthquakes the institutions and thoughts of previous periods tumble into the dust. People trample on the rubble and haphazardly pick up crumbled fragments to rebuild the edifices. Hastily erected these structures tend to become weird mixtures of earlier styles and components, rarely will they be made of altogether new material. But they will appear new to the enthusiastic beholder, because in the resulting muddle of fragmented strata the keys to an understanding of the past are easily lost.

Scientism is but one of the creeds that sprang up when Europe changed the prayer book. Faithful Liberals and Socialists live today no less in dread of ancient superstitions, and of "authoritarian" philosophies in bygone ages, than the adherents of Scientism. Presumably they will be not less aghast, therefore, than the positive Scientist Pareto certainly would have been, if it is firmly suggested here that this proud New Science of economics really originated within the precincts of Babylonian temples from metaphysically inspired meditations of very superstitious, pious priests on the mathematical implica-

[38] Benedetto Croce, *Filosofia della Pratica, Economica ed Etica* (1909). Previous extracts had appeared in the *Atti dell' Academia Pontaniana.* I am quoting from the Engl. transl. (1913) pp. 370-1.

[39] Cf. the discussion of the Economic Principle in the *Giornale degli Economisti* (1900, f.), which is reproduced in *International Economic Papers,* No. 3. (1953). One might perhaps suspect that Pareto felt irritated by Croce's coquetry with Hegelian verbiage and just refused to listen. Strange to say this was not the case. In 1897 he recommended some of Croce's books to his friend Pantaleoni as well worth reading. He became touchy only when Croce in 1900 started inquiring about the Economic Principle. Cf. Vilfredo Pareto, *Lettere a Maffeo Pantaleoni.* (Rom, 1960). II, pp. 77, 391 ff.

[40] Cf. Herbert Butterfield, *The Origins of Modern Science* (1957).

tions of fertility worship. Our modern world looks for infinitely more exalted pedigrees, only the specifications differ slightly from sect to sect. Here is Pareto's preference: "I always try to keep in my mind the examples of those masters of positive science such as Newton, Laplace, Lavoisier, Lord Kelvin, etc., to whom we owe all our science."[41] Yet already in Pareto's day, archaeologists and historians, both of mathematics, and of economic doctrines, had assembled impressive evidence to the contrary. And where Pisano got his knowledge from was known through all the ages, because he had told the tale himself.

When the learned disagree fundamentally about their methods, one might well despair of the future of economics. I do not think, however, that there is reason for fundamental pessimism. Prudential calculus is clearly economics without economic principles. It depends on the axioms of mathematics of which we are in secure possession. Therefore it can be withdrawn at once from the arid battleground of all methodological controversy. True, in the past economists have done badly in handling and developing their analytical equipment, ever since the *borghesia quattrinaia* in the towns of the Renaissance broke through the barriers to power, and started preaching to the high and mighty the new/ancient doctrine which—though not especially blessed by the Muses—at least bore the genuine kiss of Santa Masserizia.[42]

[41] Pareto, quoted from *International Papers,* No. 3, l.c. p. 205.

[42] Reputed to be the fair twin-sister of vile Avarizia. "Santa cosa la masserizia" expostulates Leon Battista Alberti in his famous *Trattato della Famiglia* (1441), which for many centuries served as prototype for this genre of literature. It is reproduced in its best parts in *La Letteratura Italiana, Storia e Testi,* vol. 14: Prosatori Volgari del Quattrocento, pp. 409-542. See particularly the passages pp. 424 ff. Werner Sombart, after detailed comparisons between L. B. Alberti, Daniel Defoe, and Benjamin Franklin, comes to the conclusion that Alberti said everything about economic virtues which others later propagated in English. Cf. Sombart, *Der Bourgeois,* ed. 1923, p. 136. How this kind of economics fared in the perfervid atmosphere of the Sunday schools in Scotland, England, and Holland, has become very clear through the researches of Max Weber, E. Troeltsch, W. Sombart, and R. H. Tawney, even though their incantations of Protestant Ethics have failed to materialise the Spirit of Capitalism. Cp. Schumpeter, *loc. cit.,* p. 80; and H. M. Robertson, *Aspects of the Rise of Economic Individualism* (1933).

The next phase, when economics became a topic in the fashionable salons and it was *de bon ton* to become the Newton of the moral world, is well illustrated by Paul Hazard, *La Crise de la Conscience Européenne,* (Paris, 1937), and *La Pensée Européenne au XVIIIème Siècle,* (Paris, 1946). See also Carl L. Becker, *The Heavenly City of the Eighteenth-Century Philosophers,* (1932). In this charming period the need for the Economic Principle was most acutely felt—and promptly satisfied. "They were interested in the Newtonian philosophy . . . No need to open the Principia to find out what the Newtonian philosophy was—much better not, in fact. Leave that to the popularisers, who could find in the Principia more philosophy than the common man could, very often, I must say, than Newton himself ever did" —remarks Becker drily (*loc. cit.,* pp. 60-61). An exhaustive survey of principles that seem to have been collected in this way has been undertaken by Dr. P. Hennipman, *Economisch Motief en Economisch Principe* (Amsterdam, 1945). Other elements of secularised theology and of dogmatised Natural Law that were picked up by economics during this time have been traced by Gunnar Mydral, *The Political Element in the Development of Economic Theory* (1929, Engl. transl. 1953).

Finally F. A. Hayek, *The Counterrevolution of Science* (1952), and Elie Halévy, *The Growth of Philosophic Radicalism,* (1928), ought to be mentioned in this context.

With such antecedents economists are not likely to mend their ways, but is there any reason why applied mathematicians should not take possession of their lawful property and develop it without pretensions to the best of their ability?

History shows that this bit of property of mathematics was the fertile garden mould from which considerable parts of economic theory have sprouted. It is in fact the earliest layer in the received corpus of economic doctrine. Like Deborah's Song in the Old Testament it stands out among the syncretistic efforts of later systematisers and philosophic interpreters. Thus considerable portions of modern economic theory might have been kept *au dessus de la mêlée* ever since the year 1202 when Leonardo Pisano brought it to Europe. No revolutions of inductive science, none of the triumphs of the Ages of Rebirth and Reason were required to see that one could make a living as a huckster, as a money lender, as a collector of rents. Not even the developments of mathematics from the 15th century onwards were indispensable for knowing that one could deliberate quite effectively about economic decisions with a bare competence in 13th century commercial arithmetic. Most business men and many economists still do so today.

"Spare yourself the trouble of philosophing. Calculate, and do not think" was Croce's advice to economists.[43] He could not have given wiser counsel.

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[43] B. Croce, *Philosophy of the Practical*, loc. cit., p. 385.

FACTOR PRICE EQUALISATION IN INTERNATIONAL TRADE AND RETURNS TO SCALE*

Samuelson and Lerner[1] have shown that trade between two countries leads to equalisation of their absolute and relative factor prices provided that, among other conditions, production is subject to constant returns to scale.[2] It is shown here that, if this assumption is abandoned, it is possible to distinguish several cases in which relative factor price equalisation is impossible, whatever commodity price ratio is established by trade. It is an obvious implication of the results that differences in the sorts of returns a commodity experiences are a sufficient cause for trade.

The essence of the argument for factor price equalisation has been shown by H. G. Johnson[3] to be that there is a single-valued functional relation between the commodity and factor price ratios (when both commodities are being produced in an optimum fashion) which is independent of the size of a country's factor endowments and is therefore the same in any two countries. It follows that, since the effect of trade is to bring about a common commodity price ratio, the factor price ratios must come to equality too, provided that neither country specialises its production on one commodity in the trade position.

If production is not subject to constant returns to scale the relation between the factor and commodity price ratios depends on the scale of production and is not necessarily the same in any two countries. Equalisation of relative factor prices requires that, whatever relations hold for the two countries, they should coincide at the common commodity price ratio brought about by trade and, in that sense, is unlikely. Impossibility of equalisation whatever is the common commodity price ratio brought about by trade requires that the relations should nowhere coincide. The arguments which are developed are concerned to show in what cases this condition is satisfied.

We consider first the operation of the two country, two commodity, two factor model when production is no longer subject to constant returns to scale, and draw some of the welfare implications.

* The author wishes to express his indebtedness to Professors E. V. Morgan and J. R. Hicks from whom he received the initial stimulus to work on this problem and to Professor H. G. Johnson, particularly for his guidance over the basic principles of non-linear production functions. The entire responsibility for the paper rests with the author.

[1] P. A. Samuelson, "International Trade and the Equalisation of Factor Prices". *Economic Journal,* LVIII, No. 230, June, 1948, and LIX, June, 1949. Abba P. Lerner, "Factor Prices and International Trade", *Economica,* N.S., XIX, No. 1, February, 1952.

[2] The words "to scale" are omitted, hereinafter, since only scale returns are discussed.

[3] H. G. Johnson, "Factor Endowments, International Trade and Factor Prices", *The Manchester School of Social and Economic Studies,* XXV, No. 3, September, 1957.

Non-constancy of returns is assumed to be the result of effects internal to each industry, so that each industry's production conditions can be specified independently of the scale of production in the other industry. Within each industry the effects of scale may arise internally or externally to firms. With increasing returns arising internally each industry must come to be dominated by at least a small number of firms. If the effects are external to firms each firm experiences constant returns to changes in its own scale and the number of firms in the industry can be assumed to be maintained at a large enough figure for conditions of perfect competition to prevail. It is this case with which we deal.

If each firm, in the *external* economies—or diseconomies—case, prices its product at its marginal cost, it must also price it at its average cost, because it experiences constant returns to changes in its own scale. Marginal cost for the industry must differ from that for each firm however, while average cost must be the same. The technical possibilities for the substitution of factors open to each firm may reasonably be assumed to be unaffected by whether other firms are carrying out the substitution at the same time. If there are no external substitution effects the forces of competition must drive production to some "frontier" combination. (Whatever the level of production of one commodity, the level of production of the other must be the maximum any allocation of resources could attain.)

The position on the "frontier" at which demand and supply are in equilibrium is where the commodity price ratio presented to consumers is the same as the community's marginal rate of substitution of the commodities in consumption. This is not, in general, on the highest community indifference curve because the commodity price ratio is equal to the ratio of average rather than marginal industry costs and is therefore, in general, not equal to the marginal rate of substitution of the commodities in production.

The offer curve may be derived on the usual principles. At each position on the production frontier a price-line may be drawn whose slope is the corresponding commodity price ratio offered to consumers. (With production taking place under constant returns to scale the price-line is the tangent to the production frontier at each position. This is no longer true, in general.) On each price-line some highest indifference curve can be reached. The trade "offer" at any commodity price ratio is measured by the negative component (horizontal or vertical) of the movement along the price-line needed to reach the highest indifference curve. The price-line now, in general, passes within the production frontier and the highest indifference curve attainable may not be as high as that reached without foreign trade. Trade may, in fact, lead to a net reduction of welfare; the opportunity to trade shifts the combination of commodities produced on to a lower indifference curve and the subsequent gain from trade may less than restore the former level of welfare.

Whereas without trade the single country must produce on its production frontier, the two countries together do not, in general, produce on their combined production frontier. There is then a welfare loss both from the failure to reach "frontier" production levels and from the failure to reach the optimum production combination of those which are in fact attainable.

Finally, it can be seen that a stable equilibrium may be possible in the trade position (without specialisation) where only unstable equilibrium is possible in *one* of the countries without trade, provided that the stablising forces in the other country are sufficiently strong.

These results apply also to the internal economies case if there are factors preventing a small number of firms coming to dominate each industry[4] and if the firms (each of the same size) are adopting average-cost pricing policies, except that the position of a country's production frontier then depends on the number of firms in its industries. Production must reach a country's going "frontier" if factors are paid the value of the marginal products they would earn if production were to take place under constant returns at the actual marginal rate of substitution of the factors in production.

Non-constancy of returns may take effect in a variety of ways in the model. We assume that in any industry the same variation of returns with changes in scale takes place at all factor combinations used in that industry. The industry's isoquants are then homogeneous and which factor combination it employs depends solely on the ratio of factor prices. It is assumed that the scale effects may differ as between the two countries for the same commodity, but that this leaves the isoquants for a commodity the same in the two countries.

Increasing or decreasing returns are taken to imply increasing or decreasing average product[5] (and not increasing or decreasing marginal product). This, of course, implies that the marginal product is greater or less, respectively, than the average product.

It is assumed that the range of attainable factor price ratios in the two countries overlaps. This requires that the relative factor intensity of the two commodities is the same at all factor price ratios between the highest and lowest attainable in the two countries, and that the countries' factor endowment ratios do not differ excessively.[6]

It is assumed: that there are two factors, (which will be called

[4] The extension to the internal economies case is most plausible if technical progress and the time factor and the phasing of a firm's expansion are taken into account, for then the firm which has got behind in the growth race is in a position to jump ahead of the others. While they are committed to absorbing their last expansion for some time ahead the lagging firm can introduce the latest techniques and restore its position. (Cf. H. B. Malangren's "How long is the long run," *Economic Journal*, June, 1960, Vol. IXX, No. 278, page 413).

[5] At any factor ratio.

[6] The limits of the range of attainable factor price ratios in a country are the factor price ratios at which the production of each commodity would require the employment of factors in the same proportion as that in which the country is endowed.

labour and capital); two commodities, (which will be called X and Y, X being the labour-intensive one); two countries; that there is factor immobility between the countries, free movement of commodities between them, and fixity of factor supplies within them.

Because of the assumption of homogeneity of industry isoquants the factor price ratio determines the factor proportion employed in each industry whether or not constant returns are being assumed. The scale of inputs in each industry is determined by the factor proportions employed in each industry together with the country's factor endowment, the scales being such as to exhaust the endowment. If the factor price ratio changes, the factor proportion employed in each industry changes in the same direction and the scales of each industry change in opposite directions so as to maintain the balance with the total factor endowment. This can be seen from the diagram in figure 1, which shows the production of X and Y in the familiar "box". O_y is the Y-origin, O_x the X-origin. O_yA and O_xA show the initial factor proportions and O_yB and O_xB the factor proportions after labour has cheapened. Geometrically, B must lie in the angle formed by O_yA produced and O_xA. Economically, an increase in the output of the capital-intensive commodity requires a greater shift of capital from the production of the other commodity than of labour. Hence the price of capital must rise. It follows that the effect of trade with another country is to increase the price of the factor in which the exported commodity is intensive, whether or not there are constant returns to scale.

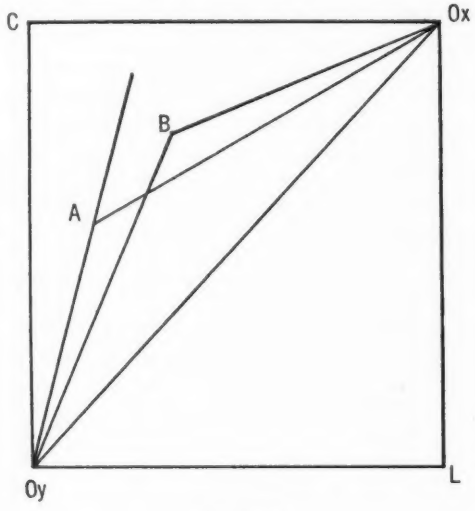

FIGURE 1

If production takes place with constant returns to scale a cheapening of labour causes a cheapening of the labour-intensive commodity. This is demonstrated in figure 2. OP_y and OP_x show the factor proportions, OR the endowment ratio and MN the factor price ratio. The isoquants are chosen to make commodity prices (OM) equal initially. When labour cheapens the same isoquants show the costs of production regardless of changes in scale in each industry. Y now costs OM_y and X, OM_x, and Y must cheapen.

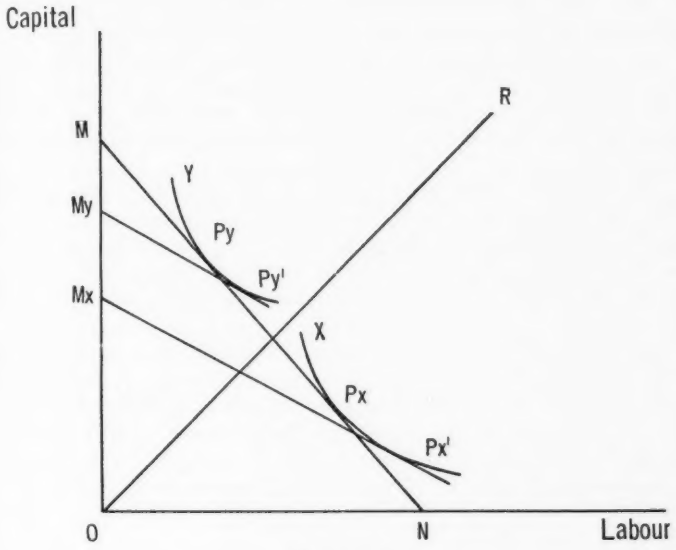

FIGURE 2

With non-constancy of returns the change in scale in each industry causes the isoquants (taken to represent average inputs per unit of output) to shift nearer to or further from the origin. With increasing returns and an increase in scale, or with decreasing returns and a decrease in scale the isoquant moves towards the origin, and vice versa. Since the scales of the industries' inputs change in opposite directions as the factor price ratio changes, the movement of the isoquants must be in opposite directions if the commodities have the same sort of returns, and in the same direction if they have the opposite sorts of returns. If both commodities have increasing returns and labour cheapens the new value of OM_y/OM_x is less than it would have been with constant returns and the relative reduction may be so great as to make OM_y/OM_x less than before labour cheapened. If both have decreasing returns the new value of OM_y/OM_x is greater than it

would have been. If the commodities have opposite sorts of returns it may be greater or less.

These results may be expressed in terms of the curve showing the relationship between the factor price ratio (P_l/P_c) on the vertical axis, and the commodity price ratio (P_x/P_y) on the horizontal. This will be referred to as the price function. With constant returns it is positively sloped. With increasing returns in both commodities it becomes more positively sloped (at any factor price ratio) and may be negatively sloped. With decreasing returns it is less positively sloped.

Next, compare the commodity price ratio with what it would be with constant returns at the limiting factor price ratios, the production of one commodity being at vanishing point. The commodity whose production is vanishing must have the same price as when it is produced under constant returns at this factor price ratio. With increasing returns the other commodity must be cheaper, and with decreasing returns dearer.

Hence if the commodities have the same sort of returns the ratio of their commodity prices must be greater at one extreme and less at the other than if they were being produced under constant returns. If they have opposite returns it must be greater or less at both extremes and (by the same reasoning) throughout the range of factor price ratios.

It follows at once that if the two commodities have opposite sorts of returns in each country and that if each commodity has opposite sorts of returns in the two countries, the price functions in the two countries must lie on opposite sides of the constant returns price function and cannot intersect. Suppose that in country I commodity Y has decreasing returns, etc., then its price function is to the left of the constant returns price function, and in the position reached by trade it must have dearer labour.

There are three possibilities for the effect of the opportunity to trade on the movement of factor price ratios, according to the way in

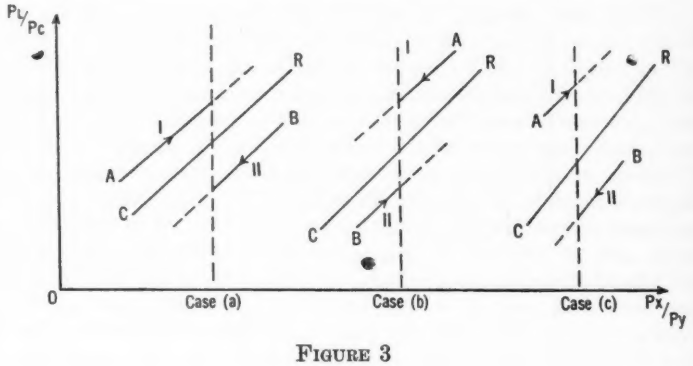

FIGURE 3

which the price ratios are related prior to trade. These are illustrated in figure 3. If country II has the higher factor and commodity price ratios prior to trade, (a), factor price ratios must converge and overshoot the position of equality. If country I has the higher factor and commodity price ratios, (b), they must converge and fall short of equality. If country II has the higher commodity price ratio and the lower factor price ratio, (c), they must diverge.

Intersection of the price functions is possible if one of them cuts the constant returns price function, that is if one country has the same sort of returns in both of its commodities.

If only the export industry experiences increasing or decreasing returns then a country's price function coincides with the constant returns price function outside the pre-trade range of the two countries' factor price ratios and lies entirely to one side of it within this range. Two countries' price functions will then lie on opposite sides of the constant returns price function if their export industries experience the same sort of returns. The opportunity to trade must cause factor price ratios to "overshoot" if the export industries have increasing returns and to "fall short" if they have decreasing returns (since these cases are comparable with (a) and (b) in figure 3).

We consider now cases in which a commodity's production function is exactly the same in both countries. Suppose the two commodities to have the same sort of returns. Then if one country produces more of one commodity and less of the other than the other country at all factor price ratios which the two countries can reach without specialising, then its commodity price ratio will be greater or less throughout this range. It will be shown that if the factor endowment ratios of the two countries are sufficiently different their outputs will satisfy this condition. The precise condition is shown in figure 4. AD and AB represent country I's endowment of labour and capital, respectively. The continuous curve AC is its contract curve and the slope of EC, which is equal to that of GA, is the extreme capital to labour ratio used in the production of Y (whose origin is at A). If the factor endowment of the other country takes it to a position outside the contract curve and within GA and EC (the shaded area) the condition is satisfied.

This can be seen by constructing points on the other country's contract curve, and using the fact that at corresponding points on the two contract curves the factor ratio used in the production of either commodity is the same in each country. The outputs of a commodity in the two countries may be compared from the lengths of lines from corresponding points to commodity origins. If country II's Y origin is also at A its X origin must be known to determine the position of its contract curve. Let the Y origin be at H. The slope of AH is then the other extreme value of the factor ratio used in the production of Y,[7]

[7] Provided H lies above ACF.

for the range in which both commodities are produced in both countries. Consider any point P on country I's contract curve between A and I, its point of intersection with AH. The corresponding point P′ must lie on AP at such a position that the line drawn through it parallel to PC passes through H. If H lies to the left of EC and outside the contract curve, AC, P′ must also be outside the contract curve and country I produces more X and less Y than country II.

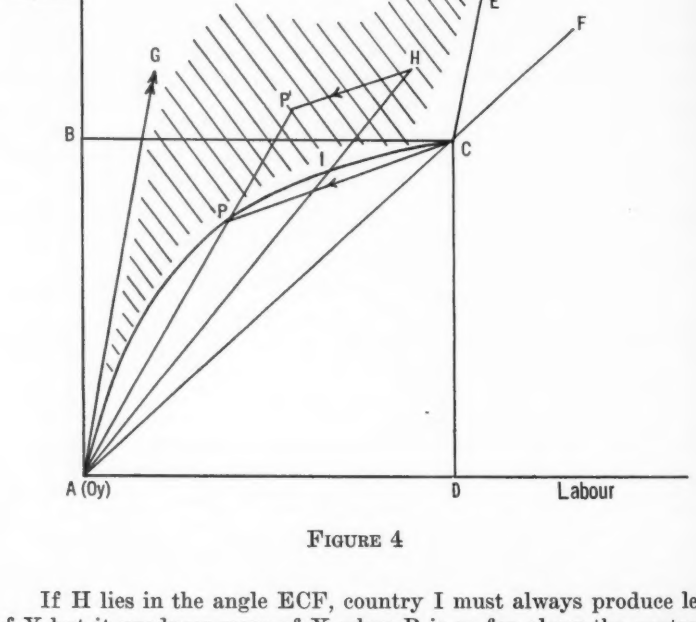

FIGURE 4

If H lies in the angle ECF, country I must always produce less of Y but it produces more of X when P is so far along the contract curve that AP and CH are convergent, and less of X when P is near enough to A for AP and CH to be divergent. Thus at high prices of labour country I produces less of X and at low prices more of X.

If H lies within the contract curve country I produces more of X throughout but less of Y when the price of labour is high and more of Y when it is low.

It can be shown in the last two cases, with H outside the shaded area, that if the extent of increasing or decreasing returns is proportional to output (at constant returns) the region in which intersection of the price functions is not possible (because one country is producing more of one and less of the other commodity) extends at least as far as the constant returns price function. When factor endowment ratios are the same in the two countries, intersection of the price functions is on

the constant returns price function and nowhere else. The proofs are given in an appendix.

If both commodities have decreasing returns the country with the higher proportion of capital (having the greater output of Y) has its price function displaced to the left of the other country's. In the trade equilibrium the other country therefore has the lower relative price of labour. With increasing returns in both commodities the opposite is true if the price functions do not become backward-sloping; the country with the higher proportion of capital also has the higher relative price of capital. If the price functions become backward-sloping it is possible for the country with the higher proportion of capital to have the higher relative price of labour. This is shown in figure 5.

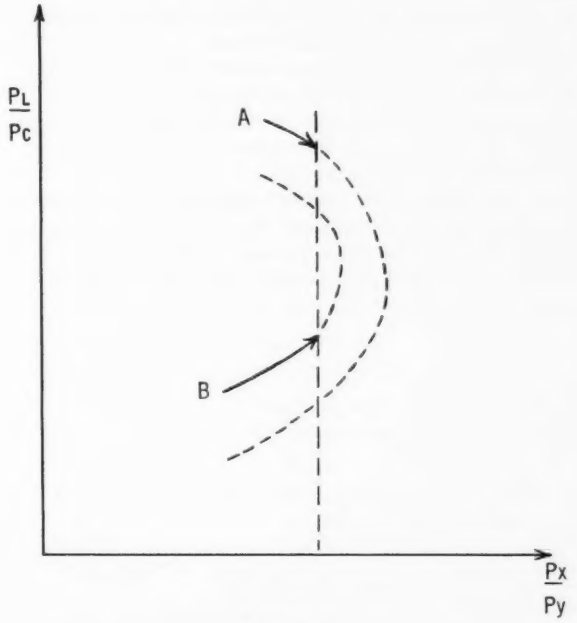

FIGURE 5

The movement of the factor price ratios is dependent on what sort of returns prevail. With decreasing returns the price functions cannot become backward-sloping and the possibilities are therefore the same as in figure 3. With increasing returns price functions may become backward-sloping and since they are not separated by the constant returns price function the possibilities are increased. If one country has higher commodity and factor price ratios convergence may lead to

either "over-shooting" or "falling-short". However, if the country with the higher commodity price ratio has the lower factor price ratio, factor price ratios must diverge with trade.

If one commodity has increasing returns and the other decreasing, the price functions cannot intersect if the production of both commodities is greater in one country than in the other at all factor price ratios. This condition is satisfied when the countries have the same factor endowment ratio. It is not satisfied at all if the "shaded area" condition of the previous case holds.

When the condition is satisfied the bigger country's price function is displaced further from the constant returns price function on whichever side it lies. If there are decreasing returns in X, it will lie to the right and if the price functions do not become backward-sloping the bigger country must have the bigger relative price of capital in the trade equilibrium. Similarly if there are increasing returns in X, it must have a bigger relative price of labour.

The movement of the factor price ratios if the price functions do not become backward-sloping is again shown in figure 3.

If the sort of returns which a commodity has is the same in both countries but the rates at which it applies differ, the effect in the case where the commodities have the same sort of returns is to move the boundary of the shaded area shown in figure 4. If the country in the shaded area has a greater extent of increasing returns or decreasing returns at the same output than the other country in both commodities at all outputs, the shaded area expands. If it has a smaller extent, the

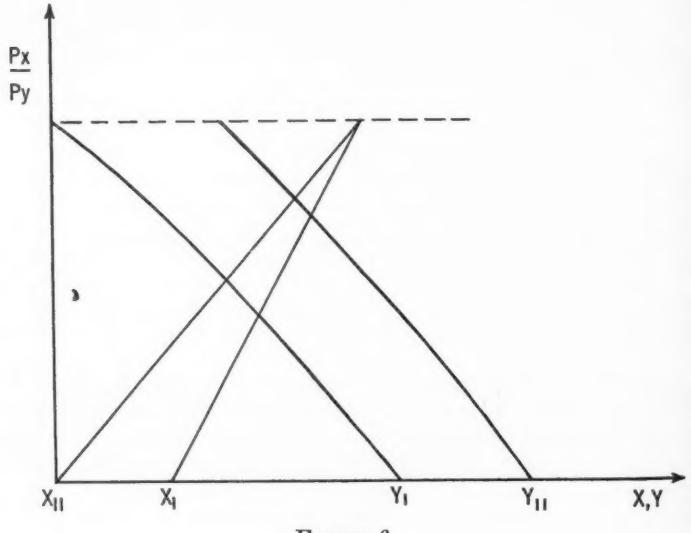

FIGURE 6

shaded area contracts. If it has a greater extent in one commodity and a smaller extent in the other the shaded area expands at one boundary and contracts at the other. In the case where each country has a different sort of returns in the two commodities it produces there are similar effects.

In all the cases considered, where the sort of returns a commodity has are the same in both countries, the conditions derived have been sufficient but not necessary. They not only guarantee that the price functions do not intersect, but also that there is a gap between them. In the case where the commodities have the same sort of returns there is an area outside the shaded areas where the condition is not broken to such an extent that the price functions intersect. Likewise in the case where the commodities have different sorts of returns there is an area on either side of the diagonal (AC in figure 4) where the condition is not broken to such an extent that there is intersection. In the first case it is clear that this area cannot reach the diagonal since the bigger country's outputs of both commodities are bigger at the extreme positions where both countries' outputs of the other commodity are zero. In the second case this area can overlap the shaded area. The relation of outputs as the factor price ratio varies is shown in figure 6 for the case where country II's factors take it to a point H on EC in figure 4. If Y_{II} is so much bigger than Y_I at the low factor price ratio that the condition does not break down because of the excess of X_I over X_{II}, then it is possible for Y_{II}-Y_I to compensate over the whole range for the diminishing excess of X_I over X_{II}. The precise position of the boundary of the areas depends on the variation of returns with output.

The results of Part II are summarised:

A. *Non-linearities different in the two countries.*	*Factor Price Equalisation*	*Relation of Factor Price Ratios with Trade*
1. (a) I X-IR, Y-DR. II X-DR, Y-IR.	Impossible	II has cheaper labour.
1. (b) I X, Y-IR. II X, Y-DR.	Possible	Any relation possible.
2. Non-linearities set in with trade.		
(a) Same sort in each country.	Impossible	DR case—exporter of X has cheaper labour.
(b) Different sorts in the two countries.	Possible	Any relation possible.

B. *Non-linearities identical in the two countries.*		
1. X and Y have the same sort of returns.	Impossible when countries' factor ratios sufficiently different.	DR case—labour cheaper in labour-rich country, vice versa.*
2. X and Y have different sorts of returns.	Impossible when countries' factor ratios sufficiently similar.	X-DR case, bigger country has cheaper labour, vice versa.*

* Assuming price functions do not become backward-sloping.

Notes: X is labour-intensive, Y is capital-intensive. IR, DR—increasing, decreasing returns.

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APPENDIX

I. Let the amount by which the ratio of actual output to constant returns output differs from one be "m" for X and "n" for Y. The commodity price ratio is then $(1+n)/(1+m)$ of what it would be with constant returns. Another country "k" times as well endowed with factors as the one considered (but with the same factor ratio) has the same ratio of outputs but absolute constant returns outputs, "k" times as big. Its commodity price ratio is therefore changed in the proportion $(1+k.n)/(1+k.m)$ when factor price ratios are the same in both countries. At the factor price ratio where, in the first country, $n = m$, the proportion in which the commodity price ratio is changed is therefore equal to one in both countries.

At a higher relative price of capital (and lower factor price ratio) than that where this intersection occurs, the output of Y is increased and of X decreased, making $n > m$. If $k > 1$, and "n" and "m" are positive (increasing returns),

$$\frac{1+k.n}{1+k.m} > \frac{1+n}{1+m} > 1.$$

With decreasing returns the inequalities are reversed. The bigger is the output of Y the greater is the change in its commodity price ratio compared with increasing returns. The same is true above the intersection point. The intersection on the constant returns price function is therefore the only intersection of the price functions.

II. It is now required to show that an expression of the type $(1+n)/(1+m)$ is greater for one country than for the other so long as both price functions are on one side or the other of the constant returns price function. If the countries are I and II, we consider the case where country II is better endowed with capital, so that

$$\frac{n_{II}}{m_{II}} > \frac{n_I}{m_I} \text{ throughout} \left(\because \frac{Y_{II}}{X_{II}} > \frac{Y_I}{X_I} \right) \quad \ldots\ldots\ldots\ldots \quad (1)$$

and, where country II is the bigger country, so that

$$n_{II} > n_I \; (\because Y_{II} > Y_I). \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

We have seen that in this case it is at low factor price ratios that the price functions cannot intersect. On this side of the intersection of the price functions with the constant returns price function,

$$n_{II} > m_{II}, \text{ and } n_I > m_I. \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Let $n_{II} - n_I = x$, where $x > 0$. (from (2)).

From (1) $\ldots\ldots\ldots\ldots\ldots$ $m_{II} < \frac{m_I}{n_I}(n_{II})$

$$\therefore \; m_{II} < \left(m_I + \frac{m_I}{n_I}.x \right) \quad \ldots\ldots\ldots\ldots\ldots \quad (4)$$

Also $\frac{1 \pm m_I}{1 \pm n_I} - \frac{m_I}{n_I} = \frac{n_I - m_I}{n_I(1 \pm n_I)} > 0$, from (3).

$$\therefore \; \frac{1 \pm m_I}{1 \pm n_I} > \frac{m_I}{n_I} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

From (3), (4) and (5) $\ldots\ldots\ldots\ldots$

$$\therefore \; \frac{1 \pm n_{II}}{1 \pm m_{II}} \gtrless \text{(resp.)} \; \frac{1 \pm n_I \pm x}{1 \pm m_I \pm \frac{m_I}{n_I}.x} \gtrless \frac{1 \pm n_I}{1 \pm m_I}$$

Q.E.D.

This proof also holds for the case where country II is the smaller country. By interchanging the country and factor labels the two cases are seen to be identical.

CRYING OVER SPILT MILK

> "Generally a dairy farmer gets plenty of advice . . . All of this advice is well meant; some of it is good, particularly that falling within the field of the advisors' operations; but there is sometimes trespass into other fields, and wrong advice, given in good faith, involves the farmer in expense and wasted effort."
>
> —1960 Report of the Dairy Industry Committee of Enquiry.

The purpose of this paper is to discuss some lengthy pieces of advice recently given to the Australian Dairy Industry as a whole. The first of these is the 1960 Report of the Dairy Industry Committee of Enquiry.[1] This Committee was appointed by the Federal Government to make recommendations designed to place the Australian Dairy Industry on "an efficient, economic and stable basis, having regard to the overall interests of the nation". The Committee's Chairman was Mr. M. E. McCarthy, a former Commonwealth Prices Commissioner and Chairman of the Tariff Board. The other four members of the Committee were businessmen and administrators with a wide variety of experience in the marketing of farm products, rural credit and related fields.

During the course of the Enquiry the Committee commissioned Professors R. I. Downing and P. H. Karmel to prepare an economic investigation of the industry.[2] Their advice to the Committee will also be the subject of some comment below. The third piece of advice—in the form of an economic study of the Dairy Industry—was undertaken by certain members of the Faculty of Economics at the University of Sydney at the request of the Australian Dairy Farmers Federation "to provide guidance to representatives of the farmers in negotiating new regulatory arrangements for the industry". Their report to the Dairy Farmers Federation has been transformed into a book on *The Australian Dairy Industry; An Economic Study* which describes and analyses the present condition of the industry and finally proposes a far-reaching plan of reorganisation.[3]

Before dealing with the recommendations of the different groups, an examination of recent trends and the present position of the industry seems desirable.

The Background:

The main product of a dairy farm is milk; a raw material which can be manufactured into a bewildering variety of end products. But for our purposes it is not necessary to go beyond the most important half dozen.

[1] *Report of the Dairy Industry Committee of Enquiry*, August 1960, (Commonwealth Government Printer, Canberra), pp. 149, price 8/6d. This will be referred to as "the Report" in the text.

[2] This has been published as Appendix 3 of the Report and also as an article in the August 1960 issue of this Journal.

[3] *The Australian Dairy Industry; An Economic Study*, edited by N. T. Drane and H. R. Edwards, (F. W. Cheshire, Melbourne), pp. xvi, 321; price 84/-.

In recent years 20-23 per cent of the milk produced in Australia has been consumed as whole milk, cream or ice cream.[4] The statistics available make it difficult to separate these different end uses, but there is little doubt that whole milk consumption represents the major share. The most important single dairy product—in terms of quantities of milk used—is butter which has accounted for 64-69 per cent of total milk production in recent years. The balance of milk output is used for cheese manufacture (6-7 per cent) and a variety of full cream condensery products such as milk powder, condensed milk, invalid foods etc. (5-6½ per cent). In addition some of the skim milk and whey which emerge as by-products of butter and cheese manufacture are used to manufacture such products as skim milk powder, casein etc.

The prices farmers receive for their milk depend on the nature of the product finally sold to consumers and its ultimate destination. Thus in 1959 farmers received between 40¼d. and 51¾d. per gallon for milk destined for the liquid milk trade (varying according to the capital city they supplied). In 1958/59 farmers received approximately 22d.-23d. per gallon of milk (or its cream equivalent) supplied to butter factories.[5]

Admittedly this comparison leaves several important factors out of account, thus overstating the relative profitability of liquid milk supply.[6] But as pointed out in the Report "there is ample evidence of the attractiveness of the liquid milk industry to producers. Present licensed milk producers carefully safeguard their quotas and indeed do everything possible to obtain increases whilst those dairy farmers outside the zones are anxious and in some States agitating to be alloted a share of this market".[7]

The price farmers receive for milk used in the manufacture of butter depends on the local retail price of butter, the overseas prices realised, the subsidy paid out of Consolidated Revenue and the proportion of total butter output which is consumed locally. Table I shows the average returns to the farmer from local and overseas sales during the last four years for which this information is available. All

[4] "Recent years" is here taken to apply to the five years ended 30th June, 1960.

[5] This is based on the average conversion figures commonly used in Australia—namely that 2·045 gallons of milk produce one pound of butter.

[6] Thus the supplier for the liquid milk market incurs heavier transport costs because of more frequent deliveries and the need to deliver milk rather than cream. Again the liquid milk supplier has to maintain continuity of production whilst the producer for the butter market can allow his output to drop during those months when the natural feed supply is low. Lastly, the butter producer possesses a by-product—skim milk—for which he may be paid extra by a processed milk factory; or which he can use to feed pigs or calves. The extra costs incurred are difficult to estimate; according to Table 46 of the Report a figure of 2d. per gallon for extra cartage and 6d. for extra feed bought might be regarded as "average" for Sydney and Melbourne suppliers in 1959. The extra income for skim milk is even more difficult to estimate. Processed milk factories pay farmers a premium of 1½d. per gallon and seem to be able to procure all the skim milk they require. But a farmer who used skim milk to feed pigs or calves would probably be able to earn more than that.

[7] The Report, p. 59.

farmers producing butter receive approximately the same price for it, irrespective of whether their product is ultimately consumed locally or overseas.[8] The pooling operation of local and export receipts is performed by the Commonwealth Dairy Produce Equalisation Committee Ltd. This body also distributes the subsidy to butter factories —as agent for the Federal Government. The co-operation of butter factories in this scheme has been a purely voluntary one, but since the introduction of the subsidy in 1942 the equalisation authority's position has been greatly strengthened. The Government's policy has been that the subsidy is payable only to factories which take part in the export-home price pooling arrangement.

TABLE I

Estimated Average Net Farm Returns From Butter

(All figures in pence Australian)

Year	Per lb. of commercial butter				Average per gallon of milk*	Percentage exported
	Local	Overseas	Subsidy	Average		%
1955–56	44·0	33·2	7·0	45·3	22·2	42·9
1956–57	43·6	27·4	7·0	44·5	21·7	37·8
1957–58	43·6	20·9	7·7	43·8	21·4	32·8
1958–59	45·2	31·0	7·0	46·4	22·7	40·6

* Does not include any allowance for skim milk.

Sources: Annual Report of Commonwealth Dairy Produce Equalisation Committee, 1960, for average returns to manufacturers. Average manufacturing costs from Statistical Bulletin: The Dairying Industry, vol. 23, No. 14; Commonwealth Bureau of Census and Statistics.

As shown in Table I overseas realisations are subject to considerable year-to-year fluctuations. Before World War II and since 1955 there has been a substantial gap in returns from local and overseas sales. This gap steadily increased in size between 1954/55 and 1957/58. During the following two years it narrowed appreciably as a result of poor seasonal conditions in Europe and a consequent reduction in butter output in the main European centres of production. But at the time of writing (May, 1961) butter prices in the United Kingdom (the main overseas outlet for Australian butter) have again fallen to a level where the return to Australian producers from overseas sales is approximately 22d. per lb. Prospects in the main external market do not justify any great optimism of an early return to the 1958/59 and 1959/60 price levels on a permanent basis.

Prices paid to farmers for milk used in cheese manufacture are subject to a similar equalisation scheme, administered by the same organisation. Milk for cheese manufacture also qualifies for a Federal

[8] Scope for variation in returns exist only in as far as different factories may have different processing costs and, in the case of co-operatively owned factories, may thus achieve some differences in returns to farmers per lb. of butter supplied.

subsidy. The price of milk for manufacture into butter and cheese sets the standard which manufacturers of other full-cream products have to match to obtain supplies. However, in the case of condensery products (i.e. invalid foods, full cream milk powder etc.) neither a subsidy nor a formal equalisation scheme operates.

The regulatory arrangements operating in the Australian dairy industry may thus be summarised as follows. Milk Boards have been set up in each State to supervise the quality of milk supplied to consumers and to license suppliers.[9] The price paid to producers has been fixed by these Boards at levels which are considerably more profitable than the prices realised by dairy farmers who produce milk for manufacture into butter, cheese and processed milk products. Returns from butter and cheese manufacture are pooled and augmented by a Federal subsidy. Margarine production has been limited in all States to reduce the possible threat which it could offer to butter producers.

Should additional dairy production be encouraged?

Professors Downing and Karmel argue that "the protection afforded to the industry does impose loss of real income on the community. In the first place, if there were no protection given to the dairying industry, some dairy producers would move into other industries where they could earn higher incomes. The real cost to the community here is the excess of the income they could earn in other occupations over the export valuation of their production in the dairying industry and it may well be substantial".[10] At a later stage they argue that the movement of resources out of dairying should be spread over some time—a transition period of 5 to 10 years being mentioned; and that it may—at least in part—take the form of discouraging people from entering the industry.

The Sydney group also argues in favour of a policy designed to move resources out of dairying, but their reasons are very different. In the book the Downing-Karmel argument (given above) is rejected as presenting "too static a view".[11] The reasons given by the Sydney group for favouring a contraction of dairy output are the following: The Australian dairy industry, they argue, reacts perversely to price

[9] The Boards have also undertaken other tasks not relevant to the discussion above. Thus the N.S.W. Board has managed to reduce real marketing margins by about 40 per cent between 1936 and 1953. (Part of this reduction is probably the result of zoning of milk deliveries). This Board has also been very active in fostering the development of Artificial Insemination.

[10] Para. 36, p. 359, this Journal, August, 1960.

[11] *Op. cit.*, p. 226, footnote 53. It is argued that some firms are always entering and others leaving an industry; hence those entering *who replace outgoing firms* confront the industry with a "marginal revenue" which is identical with the pooled (i.e. equalised) return.

It is difficult to follow this argument. If one defines the industry's marginal revenue in the usual way—i.e. the change in total receipts resulting from a (small) change in output—the industry's marginal revenue equals the export price (since changes in output affect the quantity exported and not the quantity consumed locally). If some firms are entering to replace outgoing firms no industry marginal revenue concept is involved since output has remained constant.

changes. When prices rise, output increases—either as a result of new entrants to the industry or by expanded production from existing dairy farms. This additional output lowers price—partly because it is sold on the (usually) lower priced butter and cheese export market. However, when prices fall marginal farmers do not leave the industry. Why not? The authors admit that "this is one of the aspects of the supply problem about which there is little satisfactory data so that we have not been able to contribute much towards an elucidation of it".[12] Nevertheless they are convinced that marginal farmers do not leave as rapidly as would be economically desirable. This conviction seems to be based on a careful and detailed study of incomes in dairying and a comparison with average incomes in the rest of the economy in chapter VI of the book. This provides the following main conclusions: "The first is that, by general Australian standards, the average income from dairy farming is rather low. The second is that the average conceals a great disparity between the incomes of different farmers, some being quite well off, others seemingly consuming their capital in order to live".[13]

Lack of space precludes a thorough discussion of the two aspects of this thesis—i.e. the perverse supply reaction and the low average incomes. However, the following comments should be made:

(a) The suggestion that the supply of dairy products may be more responsive to price increases than to price declines of the same magnitude has received some empirical support from U.S. data.[14] A number of writers have advanced certain theoretical arguments which can be used to explain this phenomenon.[15]

(b) Comparisons of average money incomes between various groups must be treated with great caution. Usually—at least in the case of Australian data—it is difficult to adjust the data for differences in living costs, tax liabilities, educational standards, age, working hours etc. (This is made quite clear in Chapter 6).

(c) Even if it can be shown that real average incomes in dairying are below the national average this would not necessarily provide an economic argument for a contraction of output. It seems likely that the marginal return to labour in Australian dairying is below the rural wage rate.[16] This suggests that Australian dairy farmers,

[12] *Op. cit.*, p. 22.

[13] *Op. cit.*, p. 137.

[14] H. W. Halvorson, "The Response of Milk Production to Price," *Journal of Farm Economics*, vol. 40, pp. 1,111-1,112, (December, 1958).

[15] E.g. Clark Edwards "Resource Fixity and Farm Organisation," *Journal of Farm Economics*, vol. 41, pp. 747-759 (November, 1959); this was probably not available to the Sydney group until the end of their work.

[16] Cf. J. L. Dillon, "Marginal productivities of resources in two farming areas of N.S.W."; N.S.W. Economic Society Monograph No. 188; May, 1956; F. G. Jarrett, "Estimation of resource productivities as illustrated by a survey of the Lower Murray Valley dairying area", *Australian Journal of Statistics*, vol. 1, No. 1, pp. 3-11 (April, 1959); H. P. Schapper and R. G. Mauldon, "A production function from farms in the whole-milk region of Western Australia", this Journal, vol. 33, No. 64; pp. 52-59, (April, 1957). It is disappointing that the Sydney group do not refer to any of these studies.

on the average, do not possess sufficient land and capital resources to achieve an optimum combination of labour and non-labour resources. In other words, farms should be larger in area and each farmer should have more "capital," in the form of equipment, livestock etc. at his disposal. But this is a problem of reorganisation of resources and not one justifying the conclusion that too many resources (overall) are devoted to dairy production.

On the issue of expansion or contraction the Dairy Committee of Enquiry disagrees fundamentally with the economists. At a number of points in the Report the Committee seems intent on countering what it regards as the gloomy aspect of the present picture. For instance: "Throughout the enquiry many people connected with the industry deplored the fact that consumption of butter in Australia per head of population was declining each year . . . the impression was given that the future of the industry hung entirely upon butter consumption and that it was prejudiced by the present trend. Without in any way discounting the importance of the popularity of butter the Committee found upon examination of official figures that the position was not quite as gloomy as might appear at first sight. Total domestic consumption of all milk products *in terms of milk solids* rose . . .It is reassuring that the per capita consumption of milk solids appears to be fairly steady despite the trend of butter. Pre-war the figure was 66·3 lbs. By 1954-55 it had risen to 72·3 lbs. in which vicinity it has since remainded".[17] (my italics).

There are two grounds for questioning the Committee's optimism about consumption trends:

(a) compared to pre-war, per capita liquid milk consumption has increased whilst butter consumption has declined. The benefit of this increased consumption of higher priced liquid milk has not been shared evenly; instead it has largely by-passed the depressed areas producing milk for butter manufacture.

(b) measuring consumption in terms of milk solids implies a weighting of 1 : 3 as between butter and other products since butter contains only the fatty solids—or roughly one-third of all milk solids. Hence an estimate of consumption based on milk solids will understate the decline in the consumption of dairy products in terms of milk and its gallon equivalent.

Basing their results on an interesting cross sectional consumption study, the Sydney group suggests that per capita dairy product consumption (in terms of gallon equivalents) may fall by about ten per cent in the next two decades. It is, of course, true that even such a decline would enable aggregate Australian consumption to increase as a result of population growth. But this will not necessarily reduce the volume of unprofitable export sales. During the last twenty years total

[17] *Op. cit.*, pp. 15-16.

Australian milk production has increased at a slower rate than local consumption or population growth; but it will be argued later that a crude extrapolation of these trends is probably not justified (cf. footnote 21 below). In other words, given present levels of protection (and the continuance of pooled returns), an expansion in the rate of growth of Australian milk production may occur which could add to the volume of unprofitable export sales.

The Committee does not seem perturbed by this possibility. "When prices are steady a high export volume lowers the average return and a low export volume raises it. This simple arithmetical fact has been the cause of much misunderstanding and has even led to suggestions that production should be reduced so as to reduce the export surplus that depresses the average price. It seems to be overlooked that a high export surplus, in spite of its effect on the average return per pound of butter, actually increases the total amount available for distribution to dairymen".[18] Again at a later stage: "A planned reduction in total production would reduce or eliminate the embarassing export surplus, but it would be an admission of defeat; it would reduce the total return available for distribution".[19]

As far as this reviewer is aware, no economist appearing before the Committee has denied that higher output will raise gross revenue *from dairying* and vice versa. What has been suggested is that the gross and net income of dairy farmers could be raised by the diversion of resources from the production of butter and cheese to that of other commodities. Judging from the last quotation the Committee believed that the resources set free by a planned reduction of dairy output would henceforth remain idle. What possible reason is there for making this assumption?

Since the a priori reasoning from economic theory is apparently so unconvincing, it may be desirable to give a concrete illustration. Take the comparison between producing butter and veal. Instead of milking dairy cows a farmer can allow the calf to do the "milking". The calf will be sold as a vealer when it is about ten months old. During the last four months it will obtain a substantial portion of its feed requirements from pasture so that it will probably be possible to run only three cows and vealers where the farmer used to milk four cows previously. The financial comparison between these two situations is given below. As shown in Table II the current gross return from four cows (at equalised and subsidised butter prices) is £180, whilst comparable returns from vealers (at May, 1961, prices) would be about £120. Even at these relative prices some of the bigger farmers are changing to vealers as the saving in cash costs (of around £3 per cow) and for labour makes it profitable for them to do so. Thus, according

[18] *Op. cit.*, p. 91.
[19] Op. cit., p. 91.

to one recent newspaper report, "many dairy farmers, finding that vealer raising can give them reasonable returns with much less work, have converted their dairy farms to small grazing enterprises. This is particularly the case with some of the older farmers, who see in this departure, an answer to the problems of share farming, or who have decided that the drudgery of dairying is not justified by the returns" (*Muster*, p. 4; 24/5/1961).

But consider the true value of some of this butter to the dairy industry as a whole. As shown in Table II, at current export valuation each cow remaining a butter producer costs the industry about £7. This figure makes no allowance for the lower labour requirements of raising vealers or the smaller capital investment in breeding animals. (The cow breeding vealers would need to be mated to a beef bull. No cash allowance has been made for this since one can then dispense with the services of dairy bull).

TABLE II

*Vealers Versus Butter—A Comparison**

	Vealers (Three cows)	Butter (Four cows)
	£	£
3 Vealers	120	
4 "Bobby" calves		20
Butter & skim milk (200 lbs. per cow @ 48d. per lb.; i.e. 45d. for butter and 3d. net for skim milk)†		160
Total Gross Return	120	180
Extra cash costs of butter (i.e. fuel or electricity, repairs, rubbers, cans, etc.		12
"Net" Return	120	168
"Net" return with butter valued at the farmer's current export realisation of 22d.		91

* Source of data: Five phone calls to dairy farmers.

† Average annual production per cow during the three years ended 30th June, 1960, was 405 gallons or 198 lbs. of butter at the customary conversion ratio.

This simple example has been used because it is clear that most dairy farmers could produce vealers. It is true, but irrelevant, that—at the time of writing—vealer prices are probably abnormally high. But if given the true choice (as far as the proportion of butter exported is concerned), many farmers would probably turn to other products—e.g. fat lambs, beef, wool and possibly cereals. As Messrs. Downing and Karmel have surmised, the real cost of protection (at least in its present forms) is likely to be substantial indeed. In the case of the high liquid milk prices paid to producers for milk delivered

to consumers for Sydney and Canberra, the costs involved are likely to be even greater.[20]

The Recommendations:

(a) *The Sydney group.*

The group's recommendations are preceded by an examination of likely future consumption trends, coupled with a discussion of likely changes in productivity. This leads to the conclusion that "manpower is not leaving the dairy industry at the required rate, or to put it another way, that farms are not being switched to other rural production (and sidelines are not being developed fast enough)".[21]

The group is therefore concerned to "increase the sensitivity of dairy farmers to the relative profitability of dairying". The two measures proposed for this purpose are (i) setting up a Regional

[20] In this connection the following tentative calculations for a highly improved farm in the A.C.T. may be of interest. This 350 acre farm at present runs 800 dry sheep which produced last season 10,000 lbs. of wool worth £2,750 in March, 1961.

If this farmer switched to dairy farming he could probably carry about 80 milking cows. At the average output per cow for the A.C.T. for the last three years he could expect to produce 34,000 gallons of milk annually. At a price of 4/- per gallon this would amount to £6,800 a year. To this should be added 40 bobby calves at £5 each, giving a gross income of £7,000. The extra annual costs for dairying might amount to £2,750 for labour (a married couple would need to be employed), extra feed purchased plus other additional costs (e.g. repairs and depreciation on dairy and extra watering facilities). In other words the income difference compared with dry sheep would be about £1,500. This additional income would require some extra capital expenditure on a dairy, milking machines, water facilities, accommodation for the married couple and the cost of buying a dairy herd (minus the returns realised from the sale of 800 sheep). The capital expenditure involved is probably between £5,000-£6,000, which seems to offer a reasonable return at an annual increase in income of £1,500. At present one farmer in the relevant district in the A.C.T. has changed from fat lambs to dairying and a number of his neighbours are watching the outcome of this change with interest.

However consider the effect of this change from the national point of view. The extra 34,000 gallons of milk which could be produced by our farmer would lead to the diversion of 34,000 gallons of milk to butter production in a nearby dairying area—probably the Bega district in southern N.S.W. This milk would produce almost 17,000 lbs. of butter, all of which would be added to the export surplus. At present it would be worth around £1,700 to the dairy industry as a whole and to the nation. (The value of bobby calves—i.e. £200—needs to be added here though).

So our farmer would be rewarded with an increase of his personal income of some £1,500 (from £2,750 to £4,250) if he decided to reduce the national (export) income from £2,750 to some £1,900.

[21] *Op. cit.*, p. 291. This conclusion would have been strengthened if the group had examined likely future developments in other industries at the same time. One effect of the present equalisation arrangements is that—during periods of low external commodity prices—returns to butter producers tend to rise relatively compared with returns to wool and meat producers whose prices are largely determined by world markets. As a result some wool, fat lamb and beef producers (and, to a limited extent grain growers) tend to switch, wholly or partly, to dairying during such periods. The converse situation holds during prolonged periods of favourable external prices. As a result, milk production increases relatively faster during a run of relatively depressed years—e.g. the thirties; whilst boom periods, such as those experienced during the last ten years are more often associated with a relative decline in the rate of growth of milk production. When crystal gazing into the next decade, only very determined optimists would predict a recurrence of the favourable external prices realised during the fifties.

Economic Development Service and (ii) transformation of equalisation into a Dairy Industry Domestic Market Participation Scheme. The Regional Economic Development Service would survey individual dairy farms and districts. Where these were found to have a promising future, extension, demonstration and credit would be used to improve efficiency. Where future dairying prospects seem less bright, the Development Service would "by both education and demonstration (e.g. model farms and research stations) attempt to facilitate the pioneering of other forms of rural and/or non-rural production".[22] The Service would also consider ways of encouraging farm amalgamations.

These are worthy aims which merit support; but it may be doubted whether the setting up of a new agency to conduct all of them is desirable. Field officers of Departments of Agriculture are located in dairying districts in each State to perform the tasks of extension and demonstration. Since 1948 the Federal Government has annually made available a special extension grant to State Departments of Agriculture for the demonstration of known and approved practices. In Victoria, for instance, a "Management Appraisal Project" is administered by the Victorian Department of Agriculture.

The Committee describes its workings in their Report: "Under this project qualified officers inspect the farm in question, study its record of past performance, and render a written report to the farmer as to the best uses to which his farm can be put with an estimate of the cost of developmental, structural improvement and stocking programme to take full advantage of its potentialities. This service, though not yet well known, has won the co-operation of enthusiastic farmers. Funds are lacking for its extension but in due course its expansion will be of immense help to Victorian dairy men".[23]

The Market Participation Scheme proposed by the Sydney group is essentially a quota scheme, but—as will be pointed out below—it differs radically from another quota scheme suggested by a group of seven agricultural economists (including the present writer) to the Committee of Enquiry. The quota scheme of the six economists in the Sydney group has the following three major features:

i. each butter producer is given a domestic market participation quota based on his total production.

ii. quota milk delivered to factories is paid for at price A, whereas non-quota milk is paid for at price B. How are these two prices determined? On this point the group is not really specific. The scheme "depends on Value A being higher than Value B in order to differentiate between the present higher profitability of home

[22] *Op. cit.*, p. 305. Since organisations in this modern age often become known by their initials, the name picked by the group may not commend itself to the conservative government which would have to set it up.

[23] *Op. cit.*, p. 68.

sales and lower profitability of export sales. So 'ideally', Value A should be the calculated return at Factory door on domestic sales, and Value B should be the calculated return at Factory Door on export sales. If this were so, of course the total return to the farmer would be exactly the same as it would be under the present equalisation arrangements. But it should be remembered that the differential between Value A and Value B is designed to show the inefficient farmer how unprofitable is his non-quota production, but also still leave Value B high enough to make it worth the while of the efficient producer to expand at a reasonable rate. Only in this way can the structural readjustment of the industry be brought about''.[24] At times it seems as if the six recognise the losses resulting from producing at the equalised price, but they seem to believe that these losses are only incurred by the ''inefficient'' farmer.

iii. At regular intervals, perhaps every two or three years, they suggest, quotas would come up for revision. Individual farmers' quotas are to be revised on the basis of their total production since the original establishment (or the previous revision) of the quotas. The purpose of these revisions is to aid the ''restructuring'' of the industry—by this is meant that production should gradually be concentrated in those areas which have the greatest natural advantage for butter (and cheese) production.

Whilst sympathising with this aim of the Sydney group, it seems to the writer that the means they have chosen are open to criticism. The constant (i.e. every two or three years) quota revision introduces a strong incentive to keep up or expand production.[25] Admittedly the group states that their scheme ''rewards the highly efficient producer with an enlarged quota from time to time, but not by so much that it would pay him to increase production just in order to get a larger domestic market participation quota''.[26] How is this going to be done? The knowledge that quotas will be revised on the basis of present production provides the incentive. Also, as the Sydney group recognises to some extent, the periodic revision of quotas is likely to cause considerable administrative difficulties.

All this is unnecessary if quotas are allowed to be freely sold (which the Sydney group regards as a reasonable possibility). In this case quotas can be fixed once and for all: ''restructuring'' will be done by the market and no administrative problems of re-determining quotas arises.

The suggestion of a quota scheme has not been received with much

[24] *Op. cit.*, p. 312.

[25] This is one of the reasons why the Dairy Farmers Federation appears to have decided against any quota scheme, even though other quota schemes suggested do *not* provide an incentive for an expansion of output.

[26] *Op. cit.*, p. 309.

enthusiasm by anyone. Messrs. Downing and Karmel, while attracted to a quota scheme, felt that it "would be difficult to administer and, for that reason, might have more disadvantages and fewer advantages than appears at first sight".[27] The Report too feels that there is much to be said for it but that it "would need the introduction of controls. Where there are controls there will be lawbreakers and the Committee sees no need to add to the number of either".[28] Since it seems to me that a quota scheme offers an important avenue for raising incomes without leading to any serious administrative difficulties or controls, I shall make another attempt (in an Appendix) to put the case for a simple quota scheme.

(b) *The Downing-Karmel Proposals:*

Professors Downing and Karmel argue that the level of protection afforded to the industry should be reduced because (i) it leads to distortions in resource use and thus imposes a real loss on the community (including existing dairy farmers) which may well be substantial. (ii) The protection given involves a transfer of income from the community as a whole to dairy farmers. Transfers to some of the larger and more prosperous farmers involves an unnecessary burden on consumers and tax payers which has become extremely heavy in recent years. They therefore propose that the level of protection to dairy farmers be reduced drastically from an estimated average of 72 per cent for 1956/57-1957/58 to an expected long term average of 15-18 per cent.[29] Their *economic* arguments for retaining any level of protection for the industry have been subjected to some cogent criticism by Professor Candler.[30] Any level of tariff protection for butter can, it seems to me, be justified only on social and political grounds.

It is desirable to obtain some idea of the income reduction entailed in the Downing-Karmel proposals. The available data do not allow an accurate assessment to be made; nevertheless, an approximate indication is better than none at all. According to the Bureau of Agricultural Economics 1953 survey of butter producers, the "average farmer's" cash return (i.e. gross income minus all cash costs of a non-capital nature) averaged £1,158 annually during the three years ended 30th

[27] "Rejoinder" by R. I. Downing and P. H. Karmel, this Journal, volume 37, No. 77, March, 1961, pp. 114-115.

[28] *Op. cit.*, p. 91.

[29] It should be pointed out that the level of protection has been reduced considerably during 1958/59 (to approximately 35% of export parity) and further in 1959/60 as a result of drought conditions in Europe and a consequent rise in butter prices. However, in the current financial year (1960/61) the level of protection is likely to return to the very high levels of 1956/57-1957/58. As there would seem to be little prospect of a significant long term improvement in export prices, current policies probably involve a continuation of protection at very high levels.

[30] "A further comment", by Wilfred Candler, this Journal, March, 1961, pp. 112-114.

June, 1953.[31] Adjusting for changes in costs and prices received, this becomes an annual average of £1,313 for the three year period ended 30th June, 1960[32] (the average price of butter to the farmer for the period being taken at 45d.). The Downing-Karmel proposals involve a reduction to 33d. on their assumptions of a long-run export price of 300/- sterling per cwt. On this basis the decline in cash returns would be 33% (and the percentage decline in farm income—i.e. after making some allowance for depreciation—even greater). However, the assumption of a long-run export price of 300/- may prove to be optimistic; on the basis of the export price ruling in May, 1961, (250/-) the percentage reduction of cash returns would be about 50%. There are, of course, a number of redeeming features; the reductions would be gradual, many farmers would move to other enterprises and the professors envisage special assistance for dairy farmers in the lower income groups. All this is true. But that groups should suffer income reductions of this magnitude, through little fault of their own and despite hard work, undoubtedly offends our sense of justice. Except in periods of clear and obvious emergency, democratic governments cannot adopt such policies. In other words the writer believes that a drop in incomes as drastic as a possible 50 per cent is altogether too violent to consider seriously. This is substantially the attitude taken by the Committee: "The realities of the present situation are such that the proposed basis (i.e. by Messrs. Downing and Karmel), however

[31] 1953 Dairy Survey. Costs and Incomes of a sample of butterfat producers in Australia; Bureau of Agricultural Economics, Canberra, June 1955 (roneo), p. 57. Of the £1,158, an average of £356 was spent on (gross) farm investment and a further £215 on durable consumer goods (including cars), leaving a balance of £587. Depreciation has not been taken into account above because it is an imputed item which can be the subject of considerable disagreement. Also, for many purposes the residual cash return is the figure of immediate interest. Calculated depreciation (as opposed to depreciation allowable for tax purposes) amounted to an average of £175.

[32] The adjustments made were: Cash costs were adjusted according to the B.A.E. "Total Production and Marketing Expenses" index. This gave an increase of 22·7% between 1950/51-52/53 and 1957/58-59/60. The dairy "cost of production" index could have been used instead; this would show an increase of 24·5%. The former was preferred because it does not include any imputed items. Sideline incomes were adjusted by the B.A.E. "Meats" index of prices received, since the major proportion of sidelines is culled cows, calves and pigmeats. If more time had been available it would have been preferable to re-weight this index and exclude sheepmeats.

The main criticism which can, it seems to me, be levelled at the adjustments is that no allowance has been made for productivity increases. Over the period under consideration total milk production has risen by 16·8%. We do not know how many extra "dairy farmers" contributed to this; but average production per dairy farm (with 20 cows or more) has probably risen by 14-15%. Production on farms getting liquid milk prices (for part of their output) is likely to have increased more rapidly than that of pure butter producers, but even their increase has probably been of the order of 10%. The writer made no productivity adjustments to the data because they would have had to be very arbitrary both on the production and cost side. To check whether such changes were likely to affect the reductions involved in the Downing-Karmel proposals, the figures were re-calculated, assuming a 10% increase in average production and a 5% increase in (real) costs. Virtually no difference (i.e. less than 1%) was observed in the percentage reductions.

desirable, is not possible of achievement unless there is a big increase in the level of export parity or alternatively an unmanageable disturbance to the local industry . . . It is true that the economists have recommended a gradual approach to the objective in order to minimise the foreseen disturbance, but the Committee cannot see prospects of its being attained within, say ten years, without a major upheaval''.[33]

(e) *The Dairy Industry Committee of Inquiry*

The Report also proposes a reduction in the level of protection. This is to be accomplished by a gradual elimination of the subsidy (over 10 years), coupled with a slight (1d. per lb.) reduction in the local wholesale price of butter. The Committee's proposals involve a 20 per cent reduction in ''cash returns'' as computed earlier. While accepting the economic rationale of the Downing-Karmel argument the Committee considers the income implications too radical. It also emphasises as a reason for favouring some reduction in the level of protection, that the bulk of the excess payments by consumers and taxpayers goes to producers who have the least need for it. A relatively small amount goes to the small, low-income producer.

But the reduction in protection is only one part of the Report's proposals. During the transition period a growing proportion of the subsidy is to be spent on projects which, the Committee believes, will raise efficiency and counteract the decline in income occasioned by the removal of the subsidy. What are these measures? They can be divided into two major groups, (a) those designed to help small farmers, and (b) overall ''cost-reducing'' programmes.

(a) Small producers are defined as those producing less than 8,000 lbs. of butterfat (i.e. about 9,700 lbs. of butter) or its equivalent per annum.[34] Such producers are to be assisted in three possible ways, (i) encouraging amalgamations among small, neighbouring dairy farmers by long-term low-interest loans, (ii) assisting such farmers to switch to alternative production (possibly also by means of loans) and (iii) financial grants to farmers who may incur a capital loss in disposing of their farms for purposes other than dairying.

(b) The overall cost-reduction programme envisages the following measures: (i) intensification of research into the many problems of the dairy industry including animal health and pasture improvement; (ii) an intensification of extension work; (iii) an expansion of Artificial Breeding services; (iv) more assistance to encourage Herd Recording. The administration of these assistance schemes is to be handled by an Approving Authority composed of

[33] The Report, p. 92.

[34] The setting of a single figure, dividing "small" from "other" farmers is unfortunate. Conditions differ too much from one end of the continent to the other to allow the use of a common measure for all areas.

two civil servants and a representative of the Australian Dairy Produce Board.

In this reviewer's opinion the Committee is to be greatly commended for its clear recognition of two important principles. Firstly, that there exists a serious "small farm problem" in the Australian dairy industry which is not likely to be solved without positive governmental action. Secondly, that while price increases might provide a temporary answer to the difficulties of many existing dairy farmers, a "cost-reducing" or "productivity-raising" solution is to be preferred "having regard to the overall interests of the nation". Having said this, it is necessary to record this reviewer's doubt regarding the practical benefit of these measures in the short run. In other words the probable decline in cash returns to dairy farmers of up to 20 per cent is unlikely to be offset within the ten year period by the Committee's overall cost reducing programme.

Of the four measures listed, the latter two (i.e. expansion of Artificial Breeding and Herd Recording schemes) are likely to produce relatively limited, short run improvements in incomes. (In fact some authorities, I believe, are even inclined to question the long-run benefit of Herd Recording as practised in some States). Increased research probably offers the greatest scope for substantial reductions in costs; especially research on sub-tropical soil and pasture problems. While problem farms can be found in most dairying districts, the sub-tropical dairying districts of New South Wales and Queensland contain a much larger proportion of such farms than the southern dairying districts of Victoria and South Australia where methods of raising productivity seem to be relatively well known. According to the evidence given to the Committee by a member of the C.S.I.R.O. Division of Tropical Pastures, it would probably take a decade of intensive research work, backed by an annual grant of £100,000 to £250,000, to get the better pastures. "It is anybody's guess now, as to how long before they became very widely used; but, possibly in another decade".[35]

The Committee's attitude to liquid milk prices is simple and straightforward: "There is only one answer to the problem of high prices for liquid milk and that is to reduce them".[36] On this point the Sydney group argues that lower milk prices are not likely to benefit liquid milk suppliers. "There is a general belief that the price elasticity of demand for whole milk is relatively small, and there is no evidence to contradict this."[37] It is disappointing that the Sydney group made no attempt to estimate the responsiveness of milk consumption to price changes in Australia, using the different prices charged in the various capital cities. The figures given in the Commit-

[35] P. 490A Transcript in Evidence, Dairy Industry Committee of Enquiry; (11th September, 1959).
[36] *Op. cit.*, p. 98.
[37] *Op. cit.*, p. 253.

tee's Report (Table 48, p. 59) suggest that the long-term elasticity may be substantial, though probably below unity. Nor is an inelastic demand a sufficient condition for the conclusion that liquid milk suppliers would lose by a price reduction. Price changes will affect supply (from existing producers); hence *net* incomes are not necessarily reduced. Furthermore, should one not consider the effect of milk price reductions on the incomes of butter producers as well? (I am ignoring consumers here because the Sydney group was advising producers' representatives).

On margarine the Committee believes that the national interest favours a removal of restrictions on the production of table margarine, but considers that this should not be attempted during the planned ten-year-reorganisation period. The Sydney group lists certain arguments for and against a lifting of margarine restrictions but does not "presume to weigh these competing interests which is a matter for political decision".[38]

As might be expected, the Report has met with widespread criticism from dairy farmers and their representatives; the gradual removal of the subsidy, the ultimate lifting of margarine restrictions and views on liquid milk prices being the main bones of contention. Newspaper reports from some of the poorer dairying districts suggest that isolated farmers and perhaps some smaller groups have welcomed the Report's conclusions but these would seem to be small minorities. There has been comparatively little discussion of the Report outside the dairying industry. Some city papers commented favourably on the Committee's willingness to state unpleasant facts which will need to be faced some time; it was also pointed out that implementation of the Report's recommendations will require considerable political courage. The likelihood of the three major "unpalatable" recommendations (i.e. subsidy, margarine and milk prices) being adopted is probably small. Both the Labour and the Country Parties seem to be strongly opposed to them. Whilst the Liberal Party may welcome the gradual subsidy reduction which is envisaged, it is not likely to press for such a policy in the face of determined opposition by dairy farmers' organisations and by its major political ally.

A summing up

Any reviewer is faced with the problem of choice—concentrating on some lines of arguments and ignoring others. The level of protection to be enjoyed by the industry in future is obviously of major importance for the Report; the Committee regarded it "as the most important part of its assignment". On this point the Committee was well aware of the arguments—economic, political, social—on both sides. "Consideration of the position in New Zealand, the position of other primary exporting industries in Australia, the continuing and grow-

[38] *Op. cit.*, p. 225.

ing cost of the dairy industry to the nation and the rights of the people who are paying the costs urges a reform of magnitude; on the other hand consideration for those who are giving all their lives and resources to the industry, the circumstances under which many of them are living and the fact that the industry has been spoon-fed to instability, urges generosity''.[39] In this reviewer's opinion, the Committee has struck a fair balance.

In addition it has produced a very readable document. It has also performed an important function by drawing attention to the limitations of cost of production as a basis of price fixing, to the uneconomic pricing of milk and sweet cream in most capitals, and to the scope for introduction of new products. As pointed out earlier there are some flaws to be set against these achievements. The fact that the Committee has not considered a quota scheme which would seem to offer *the* major short-run possibility of raising dairy farmers' incomes (without subsidies or extra protection) has probably militated against the possible adoption of the Committee's other recommendations.

The dustjacket of the Sydney book claims that the authors have ''gone beyond the relatively narrow and safe confines of analytical economics into the region of 'political economy' ''. It has been suggested above that both the analysis and the ''political economy'' are subject to considerable criticism. There are, it is true, certain redeeming features. The Sydney group has presented an integrated plan of reorganisation which contains many useful elements. Furthermore, many of the statistical estimates, especially on demand, incomes, number of dairy farmers and levels of government assistance in the past, will be of considerable value to workers in the field. However, at a favourable price ratio of almost ten to one, this reviewer recommends the Committee's Report as ''the best buy''.

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[39] *Op. cit.*, p. 105.

APPENDIX

THE CASE FOR A WORKABLE QUOTA SCHEME

The *essential features* of such a scheme are:

i. All farmers selling milk or cream to a factory (co-operative or proprietary) on a butterfat basis to be given a quota equal (approximately) to 60 per cent of their average annual production during a base period of, say, the last three years. Milk zone suppliers or holders of liquid milk contracts would be entitled to quota certificates only for 60 per cent of that proportion of their output they sold at butterfat prices in the base period.
ii. The quota certificates to be deposited by the farmer with the factory which he supplies.
iii. Quotas to be freely saleable from one farmer to any other.
iv. The registration of quotas in an individual supplier's name entitles him to payment for his milk and cream (up to the quota limit within any one financial year) at a definite price fixed annually—which is originally equal to the net realisations from this product on the home market. (Divergencies may arise over time if total home consumption shows a definite upward or downward trend. At present no such trend is discernible).
v. All other milk or cream supplied to factories (on a butterfat basis) to be paid for at the export prices realised after sale.

The *administrative arrangements* necessary to operate such a scheme are:

i. Instead of equalisation of returns, the Federal Government to impose an excise tax on all locally consumed butter, cheese and full-cream condensery products. The excise tax to be fixed at a rate which will leave local retail prices of butter and cheese at the present level.
ii. The proceeds of this tax to be paid to the respective State Governments. The State Governments to distribute the proceds (as "agents" of the Federal Government) to factories in proportion to the total quota tonnages held by each factory. The factories to distribute the monies to owners of quota certificates in part-payment for their milk or cream supplies.

The *advantages* of such a scheme are:

i. Quotas represent the major short-run method which can significantly raise incomes of existing dairy farmers without imposing a corresponding burden on Australian consumers or taxpayers in the form of higher prices or increased subsidies. (Cf. Table II of the text).
ii. It would accelerate the movement of high-cost producers out of dairying by providing them with an additional incentive to do so. This incentive would be provided because they could sell their quota certificates to farmers in areas better suited to dairying. It would thus enable land to be more easily retired from dairying to its next best use, by mitigating, or perhaps wholly eliminating, the capital loss normally associated with such transfers.
iii. It would slow down the expansion of dairying in low cost areas unless it was economically justifiable at export valuations. In particular it would discourage fat lamb, wool, meat and wheat producers from adding to unprofitable dairy export surpluses because the prices of their products had declined. It would also discourage State Governments in Victoria, New South Wales and Queensland from setting up additional dairy farms on irrigated areas unless these could be profitable at export prices.
iv. It would reduce the cost of milk and cream to exporters of full cream condensery products and thus assist in procuring more profitable export outlets for our surplus milk supplies.
v. It would give dairy farmers the financial benefit of equalisation without relying on voluntary compliance by factories. (The elimination of the subsidy proposed by the committee could easily lead to the collapse of the present equalisation machinery).

Objections which have been raised to such a scheme are:

i. It would create a class of "privileged" dairy farmers.

Reply: "Privileges" of this type are by no means uncommon in Australian economic life—e.g. taxi cabs, milk runs, newsagents, pharmacists, liquor licenses, liquid milk quotas. This particular privilege can be defended on the

grounds that it is designed to compensate existing farmers who have made substantial investments in plant, equipment, buildings etc. which have little value for purposes other than dairying. The adverse economic prospects for dairy products overseas make it desirable to discourage additional dairy production without imposing large income and capital losses on those who have made such investments in the past.

ii. It is administratively impractical, leads to "controls" and evaders etc.

Reply: There are no administrative problems connected with the collection of an excise tax. Administrative problems of distribution do not exist either. But it is true that there are problems of deciding *who* is to be given a quota certificate. Consider the case of a farm owner who rents his land to a tenant who in turn employs a sharefarmer (there *are* such cases). The farm owner should be given the quota certificate (because he owns the specific resources which lose their value as a result of the lowered profitability of dairying). When a scheme is introduced no sale or transfer of the quota certificate to another farm is to be allowed during the term of an existing tenancy agreement (otherwise the intent, if not the letter, of the tenant's contract has been changed). Such provisions would not be necessary for any tenancy agreements entered into after the quota scheme came into operation, nor would a quota scheme need to make any special provisions for sharefarming agreements (which are subject to short notice from either party).

Another administrative problem which should be mentioned is the determination of the level of the excise tax. Since export prices fluctuate it will be necessary to vary the level of the tax or to allow local wholesale and retail prices to vary. Also, because the total yield from the tax is not known precisely in advance, distributions to farmers for quota production may need to take the form of an interim and a final payment. But this is a feature of the present equalisation system and should not occasion any serious administrative difficulties. Alternatively a quota scheme can be made to "balance" over a number of years instead of annually. Thus the need for delayed payments can be eliminated.

In other words there are some, relatively minor, administrative problems; but the scheme is neither administratively impractical, nor does it lead to "controls" and "evaders". It is not an "ideal" solution but a "second best" solution.

THE ORGANISATION OF THE OVERSEAS TRADE IN NEW SOUTH WALES COAL, 1860 TO 1914

Between 1860 and the outbreak of World War I the New South Wales (= N.S.W.) coal industry enjoyed a flourishing export trade with, on average, about 30% of total output being consigned overseas. Beginning with less than 100,000 tons in 1861 the total exceeded two million tons by the early years of the present century. (See Appendix I.) To a large extent, the expansion derived from the close association developed between N.S.W. coal exports and the operations of the British shipping industry. This process is described elsewhere.[1] During the period coal was marketed in a number of ways. In the opening years most coal destined for foreign ports was marketed locally in Newcastle (N.S.W.). But with the growth of exports and of the association between the N.S.W. coal trade and British shipping the trade tended more and more to be organised not in N.S.W. but in London. By the early 1900's the entire overseas trade in N.S.W. coal was arranged in London. The purpose of this note is to outline the various forms of commercial organisation employed in the trade and to trace the passing of control to the United Kingdom.

The simplest way in which coal was marketed was by the cash sale of a cargo to a ship's captain who called personally at a Newcastle (N.S.W.) colliery office. The most complex perhaps may be exemplified by an order emanating from a gas producer in Valparaiso. Passing through shipping merchant "corresponding" houses in the local market and in the U.K. (the former often an offshoot of the latter), the contract ultimately reached a N.S.W. colliery via its London office or agent. The completion of an order received in this way involved a number of stages and intermediaries. The United Kingdom shipping merchant chartered voyage tonnage or ear-marked tonnage on time charter to him. He arranged a cargo to Australia, direct or via ports in other countries, and, with the help of his correspondent in Valparaiso, a home cargo to Europe. Finally he took up insurance in London. The coal company in turn arranged for coal to be available when the ship was ready to load in Newcastle. After the early 1900s, when an appeal decision of the House of Lords (concerning a demurrage action in Newcastle, N.S.W.) found that loading delayed beyond 30 days gave rise to demurrage,[2] the allocation of cargoes for specific ships meant

[1] For a discussion on the development of the export trade in N.S.W. coal see my article, "The Overseas Trade in New South Wales Coal and the British Shipping Industry, 1860 to 1914", *Economic Record*, August, 1960.

[2] *House of Lords* (Sc.) 1905: Ardan Steamship Coy. Ltd., Appellants and Andrew Weir & Coy., Respondents. The steamer in the case was delayed 6 weeks. As early as 1896 Liverpool shippers sought colliery agreement that loading should begin within 14 days of notification of ship readiness. By December 1905, following publication of details of the Appeal, N.S.W. coal companies were pledging themselves to load steamers within 10 and sailers within 30 colliery working days. (Australian Agricultural Company (= AAC), Out Despatches (= Desp.) No. 731, and No. 936; In Desp. 907). [The records of the Australian Agricultural Company, one of the largest N.S.W. coal companies in the nineteenth century, are housed partly at the Australian National University and partly at the Company's office in Newcastle (N.S.W.).]

for coal companies a fine adjustment of their raising operations with their contracts. Payment for the coal, usually by bills of exchange, similarly passed through the "corresponding" houses to London whence, if relating to a coal company registered in N.S.W., it was transmitted to Newcastle.

During the early years of trade expansion coal was marketed in a number of ways. Consignments were made on colliery or on ship account. Overseas consumers were supplied on direct orders, or on orders received through the consumer's consul in Australia, or via overseas or local agents. Local agents, some retained on a *del credere* basis, were also effective in arranging sales in N.S.W. through their overseas contacts. In yet other instances overseas merchants speculating in coal were supplied direct or through local agents. Only one instance has been found where a coal depot was erected overseas to promote sales of N.S.W. coal; the depot, at Singapore, was due to the enterprise of a Brisbane merchant.

Generally speaking, collieries sought to confine their operations to the loading of a vessel chartered by the consignee or his agent. Occasionally they were forced into the freight market, however, chiefly when making consignments on company account. On the whole they preferred not to accept the risk of speculative shipments; as one company manager expressed it, "my Directors have been content hitherto to be producers only".[3] But during trade depressions, or when seeking to promote sales in a new market, or in one not previously exploited by a particular company, shipments on colliery account were not uncommon. They involved chartering tonnage on a voyage basis, effecting insurance, meeting entry dues at the destination port, and relying upon an agent at the port of discharge for the disposal of the coal. For such shipments the immediate freight from Newcastle was the limiting factor, in contrast to the aim of British shippers to secure a high ultimate freight to the U.K. Instructions on this score issued by the directors of the Australian Agricultural Company (= A.A. Company), one of the largest N.S.W. coal mining companies in the nineteenth century, are both apposite and enlightening:[4]

> "We desire to impress upon your mind that you should be guided more by the rate of freight than by the advised price of coal at the port of delivery. We do not wish you to run the risk of consignment except under special circumstances, and when those circumstances arise, it is the freight you have to pay, and not the current price in the different markets which ought to guide you."

Coal companies found it an unattractive method of selling coal. For those engaging in it risk was high, it also tied up working capital over long periods. Summing up in 1879 the results of varying his sell-

[3] AAC General Superintendent Out Letters (= G.S. O/L) 2 May, 1877, to A. D. Moore.

[4] AAC EMD 153. For discussion on the importance of freight rates generally to the N.S.W. coal industry see "The Overseas Trade in New South Wales Coal" etc., *loc. cit.*

ing methods two years earlier (which netted his company 2/1 per ton on coal costing 8/- to raise) the A.A. Company General Superintendent noted that his company had "departed from their well-established custom of selling coal f.o.b. at Newcastle . . . merely to introduce it to a new market, this being achieved, there is no object in any longer continuing to take the risks of the freight market which is a branch of business we are not accustomed to and do not care for".[5] Those companies not practising it at any one point in time disliked its pursuit by others on the grounds of unfair trading practices. Nevertheless, as the evidence abundantly testifies, most, probably all, the larger companies resorted to it at some time during our period. Many would doubtless justify their action as did the A.A. Company General Superintendent: "we held off from chartering [sc. on company account] until very recently in the hope that we would be supported by the bona fide coal merchants, but finding we were not, were compelled to adopt the practice . . . in order to keep our coal in the market". His view, however, was that "it is not the legitimate way of doing business and we will discontinue the practice as soon as our competitors get tired of following such a profitless game".[6] Even during the vitality of the Northern Vend, when theoretically such practices were banned, those collieries with relatively inferior coal would continue to ship on their own account despite criticism of their associates.[7] Professing in public its adherence to the rules of the Vend Association, one company covertly made speculative shipments using a shipping agent as "dummy" principal.

Consignments on ship account admirably reflect the relationship between N.S.W. coal and British shipping.[8] They represent cargoes sold to those ships which, after unloading in Australia, found themselves without a return cargo to Europe, and without charter arrangements to take them to a port whence a home cargo might be obtained. Had coal not been available in N.S.W. they would of necessity have cleared in ballast. Instead, a cargo of N.S.W. coal spared them the expense of ballast and gave them freight-earning capacity. Evidence to illustrate the extent of consignment on ship account is limited to the years 1870 to 1890,[9] that is for the years before developments in shipping management (described elsewhere) were likely to prevent such uncatered-for arrivals. Extracting the results for the sample years 1873, 1877, 1881, 1885, and 1889, certain features emerge. Such consignments account for about 17% of total shipments, with the proportion higher in the middle three years than in either 1873 or 1889. Slightly less than one-half of consignments on ship account were to

[5] AAC G.S. O/L 25 February, 1879, to A. D. Moore.
[6] *Ibid*, 22 September, 1863, to J. L. Burke.
[7] The Northern Vend was a trade association of Newcastle (N.S.W.) coal producers. It existed during the years 1872-79, 1882-93 and 1900-13. Its functions were to apportion the trade on an agreed percentage basis and to fix minimum prices and maximum discounts.
[8] See "The Overseas Trade in New South Wales Coal etc.", *loc. cit.*
[9] R. B. Wallace *Monthly Reports* (Mitchell Library, Sydney, N.S.W.).

Asian ports, about the same proportion were to trans-Pacific ports, the remainder to ports outside the geographical areas shown in Appendix I, none going to New Zealand. More significant, perhaps, if individual years are taken, is the tendency for the Asian proportion to rise between 1870 and 1890, and for the San Francisco proportion to fluctuate between 5% and 30% of all shipments to that port. It would seem that the peaks coincide with abundant harvest years in California.

In the first decades of the expansion of trade, orders were received direct from overseas customers or, with some countries, through their consulates in Australia. An enquiry from the Netherlands Consulate in Melbourne in February 1860, for example, was followed in May by orders from the Dutch government in Java.[10] Before many years passed this method was almost completely superseded and recourse was made by overseas consumers to their local shipping agents or mercantile houses. Orders entrusted to these intermediaries were transmitted to Newcastle in one of three ways. They could be sent direct to a coal company. They could be sent to a Sydney or Newcastle agent or merchant (hence largely the point of coal companies employing agents in N.S.W. for the overseas trade). Finally, as increasingly became common practice, they could be sent to a London "corresponding" house.

Orders received via a local agent entailed little work for the coal companies and usually little risk. The agent merely informed the company of the amount required, the destination, and arranged in collaboration with the company concerned for the loading of the vessel he had chartered. Those received direct from an agent or merchant house overseas might announce merely that a vessel under charter was on its way to Newcastle and should be loaded on account of the orderer. Jardine Matheson and Company of Hong Kong normally adopted this course. Their connection begins in June 1863 with the placing of an order on the basis of certain inducements originating from the A.A. Company Directors and notified by Jardine Matheson's London "friends" (Messrs. Matheson and Company, London). For some years their chartered vessels brought tea to Melbourne and returned via Newcastle with coal.

Other orders received direct from overseas merchants, evidently those unable to fill a ship for the voyage to Australia, required the chartering of shipping in Newcastle and were subject to the fulfilment of highly detailed conditions. Transactions between one such merchant in Hong Kong and the A.A. Company, recorded in some detail because of a dispute over alleged non-adherence to conditions imposed, are revealing of the type of stock control attempted and the administrative work involved. Negotiations begin in June 1868 with an open order for a given quantity of coal to be despatched to Hong Kong or to a partner in Shanghai provided freights below certain maxima could be obtained.[11] Successive letters from Hong Kong reduced the freight limits,

[10] AAC CC-G 14. For tenders to the Mauritius Government see CC-T 61.

[11] Correspondence on this subject is voluminous. For a precis see AAC CM-P 29-31.

at a time when freights were tending to rise; hence they never coincided with the maxima. (Irritating though this must have been for the A.A. Company, the weakness of the Hong Kong market clearly dictated this course. "We must avoid shipping", the Hong Kong merchant points out, until the market recovers from its present saturated condition due to large U.K. and N.S.W. coal arrivals.)

During the following year when the Hong Kong and Shanghai markets were less glutted but still unsteady, fresh instructions were sent to Newcastle. These authorised the monthly despatch within new freight limits to varying quantities of coal based on aggregate exports from Newcastle to China during the preceding three months. For example, if the total shipped during the previous three consecutive months was less than 4,000 tons, up to 1,000 tons per month could be consigned; if over 4,000 but less than 5,000 tons, then 800 tons per month and so on. Since the totals, the freight limits, and the monthly quantities were all subsequently varied, and consignments when made were questioned, it is not surprising that the General Superintendent of the A.A. Company lost interest in this particular client.

One aspect of the role of local agents in the organisation of the overseas trade has been touched upon. Two others might be noticed, their control of shipping in Australian waters and their employment by individual coal companies to promote sales abroad; the latter often facilitated by the former. The shipping agent in Australia does not seem to have become specialised in any one branch of ship brokering, as did his counterpart in England, nor, indeed, does he appear to have confined his activities to shipping agency work.[12] Rather did he combine the functions of shipbroker and general agent for the export-import trade. One agent extended his activities to include the provision of harbour tug facilities;[13] many were insurance agents and brokers; one also acted as the consul for many small countries.[14] Some were colonial "corresponding" houses for United Kingdom shipping merchants and agents.[15] Their various overseas contacts gave them excellent opportunities to introduce N.S.W. coal into foreign markets. The A.A. Company employed an agent who for many years handled every branch of the Company's export and import trade; he was concurrently the P. and O. Agent in Australia. He outlined the potential effectiveness of his coal agency work as follows:[16]

> "I have not yet had time to show plainly the effects of my exertions for the company but do not doubt these will become

[12] The history of ship agents in Australia has still to be written. For some notes on the subject see "The History of the 'Syndicate' Group of Australian Ship Agents", *Holt Bulletin*, January 1955.

[13] AAC Out Desp. 48, p. 323.

[14] The firm of R. B. Wallace of Newcastle was operating from at least 1869 until bought out by Scott Fells & Coy. in 1908 (*Newcastle Chronicle*, 27 July 1869, AAC's Sec'y. to G. S. 5 June, 1908). Wallace was the Consul for Chile and many other countries. Consular "invoices" and visas were necessary for all shipments of coal to Chile after May 1899 (AAC Out Desp. 782).

[15] E.g. Willis, Merry and Lloyd; Devitt and Moore and others.

[16] AAC HMB 22.

> manifest in various ways for I have not been idle having exerted my interest and given the benefit of my name (acknowledged by you to be powerful, and thought so by others) by writing my correspondents and circulating information in China, Manila, Singapore, Java, India, Mauritius . . . and by affording the Commodore [sc. of the P. & O.] and others here your testimony in favour of the coal all which the keenness of competition renders daily invaluable to you—in fact some of these effects may be already seen in the orders . . . already received by you from various countries stated and further proof of my influence may be on the way."

He, and others like him were usually retained on a commission basis of 2½% plus a further 2½% *del credere* commission where the risk of debt collection was passed on to them.

As important was the agent's interest in shipping "they [i.e. agents] have information as to the character and class of vessels of all nations and have agencies at the colonial ports . . . this brokerage business is thoroughly organised in these colonies and it is no easy matter to procure vessels excepting through such agencies".[17] In the early years, before ship captains were closely tied by the terms of their charter party, an unscrupulous agent could, and evidently did, bribe captains to accept the coal of a particular colliery.[18] In at least one instance the "Syndicate" of Australian shipping agents approached a United Kingdom shipping company to secure the routing of the company's vessels to ports in Eastern Australia.[19] In the long term more significant was the development of a general practice of United Kingdom shipping merchants, when despatching vessels chartered by them, to consign vessels to specified agents in Australian ports, authorising them to oversee all details connected with the loading of a cargo of coal.

Largely the practice of vessel consignment grew out of the change in locale of marketing control in the export coal trade. Shipments made in accordance with round trip charters arranged in London rose in importance; other methods declined. By the early or mid-1890s the bulk of export orders originated in London. In 1903 when John Brown (of the famous N.S.W. coal company of J. & A. Brown) was in London he urged that full control of the foreign trade should pass to London; "his idea appears to be that a Newcastle Board should regulate the colonial trade and a London Board the foreign trade".[20] From the end of 1906 complete control of the Newcastle export coal trade became vested in London in a Committee made up of representatives of those Newcastle (N.S.W.) coal companies with an interest in the overseas trade in coal. Preliminary correspondence between London

[17] AAC CM-P 29-31.
[18] AAC JBW-B 5, 48, etc.
[19] F. E. Hyde and J. R. Harris, *Blue Funnel* (University of Liverpool Press 1956), p. 110 ff.
[20] AAC In Desp. No. 876, p. 9.

and Sydney in 1906 touching on the point states "I feel sure that the foreign trade must be done by the London Board and all orders through one office". Another letter outlines the aims: "all the companies who have a foreign trade should be represented on it (i.e. the London Board) and they should be called upon to declare the names of their foreign agents. These agents should then be instructed to fix the c.i.f. prices at the different foreign ports".[21] From then until 1914, with some indecision in 1910, the London Board met regularly, arranged contracts with shipping merchants, held conferences from time to time with the shipping interests and in general sought to apportion export quantities, fix prices, and to stimulate trade by dissuading shipping merchants from bidding up freights.[22]

The first recorded instance of shipments arranged in London is as early as 1860 when John Brown, visiting England to buy colliery equipment, induced several vessels bound for Australia to load Newcastle coal.[23] Shipping merchants not unreasonably preferred the security of contractual arrangements for the delivery of coal in overseas markets. In 1863 the A.A. Company Directors informed their Superintendent "there would be no difficulty whatever in obtaining the co-operation of shipowners if contracts were secured".[24] From then on the system of forward contracts developed steadily. Initially more common were contracts for single cargoes to load a vessel named long in advance. By the 1890s annual or longer contracts had replaced single cargo contracts. They required the future loading of agreed monthly quantities on behalf of a United Kingdom shipping merchant of vessels to be chartered by him. The tendency for contract periods to lengthen reflects the more sophisticated organisation of coal delivery and of on-haul cargoes in overseas ports, both made possible by the network of "corresponding" merchant houses set up in overseas markets.[25] Coinciding with the emergence of long-term contracts arranged in the United Kingdom, pressure was brought to bear upon coal companies by shipping merchants in both the U.K. and the American ports to obtain sole agency representation for them in particular markets. In 1903, for example, before the A.A. Company's new colliery on the Maitland field was even producing for export, three firms in Liverpool and a British firm in Valparaiso were seeking its agency.[26] After 1906 the bulk if not the whole of the South American trade passed into the hands of two shipping merchants, but by this time trade was being shared on an agreed percentage basis.[27] Without

[21] AAC Sec'y. to Isaac Chapman of Sydney, 21 December, 1906, and to the G.S. 14 September, 1906.

[22] See AAC "Memo of Proceedings at a meeting of representatives, etc." annexed to In Desp. No. 995.

[23] AAC Out Desp. No. 127, p. 332.

[24] AAC EMD 72.

[25] E.g. Matheson & Coy. of London, Jardine Matheson & Coy. of Hong Kong; Balfour Williamson of Liverpool and Balfour Guthrie & Coy. of San Francisco, and so on.

[26] AAC In Desp. No. 867, p. 2.

[27] Andrew Weir & Coy. of Glasgow and J. & A. Brown of Newcastle (N.S.W.) and London.

some such safeguard sole representation was a mixed blessing. The Valparaiso firm at the time of its approach to the A.A.Company was already acting in that market as sole representative for three of the Company's competitors, a month later it added yet a fourth to its list.

In arranging coal sales in London, those N.S.W. companies registered in England, the A.A. Company and the Scottish Australian Mining Company, held an initial advantage. It was one disliked and coveted by N.S.W. registered companies. Early negotiations towards trade control broke down in part over this hurdle, companies not registered in London sought to bar the payment of commissions on orders arranged there. Ultimately, however, equal opportunity was achieved when the larger N.S.W. registered companies opened branch offices or employed agents in London.

Little can be said about insurance or the costs of marketing. Apart from the allowance of agency commission of 2½% plus, in some instances, a *del credere* commission of a further 2½%, marketing charges arose for coal companies only with consignments on colliery account. The detailed results of only two such ventures have been traced; no information is available on the trading experience of shipping merchants. The c.i.f. price, where no import duty was levied, consisted of the f.o.b. price plus freights. Incidental charges (customs entry fee, consul's fees, etc.) were insignificant items on a cargo. Because more and more coal orders originated in London, it is not surprising to find that the bulk of the insurance taken up on coal exported from N.S.W. was also effected in London. Local insurance was confined to those cargoes arranged in N.S.W. After the early 1890s, when losses at sea due to combustion of coal cargoes began to occur, local insurers were reluctant to handle coal cargoes at all. The pre-fire rate of 40/- per £100 was doubled, one insurer increased the rate to certain destinations to 9%, but even so few insurers were prepared to accept the risk. As one pointed out in 1896, since 1892 his loss ratio had been 170%, that is to say, he had paid out nearly 1¾ times his premiums in losses. Lloyds of London, on the other hand, with a much larger volume of business were better able to average out risk and rates.[28]

The financing of the export trade in coal depended upon the willingness of coal companies to grant some measure of credit to the immediate purchasers. Initially they were loath to assume any risk, other than with consignments on colliery account, and either insisted upon cash on delivery or passed the onus of debt collection to others by means of *del credere* commissions. But in the monetary circumstances of the new colony this proved to be impossible in the overseas trade (as it was indeed in the interstate trade). Urging upon the A.A. Company the necessity for credit to shipping agents, the Company's agent in 1865 stressed that "it is not always that a party securing an order

[28] N.S.W. Leg. Assembly *Report of the Royal Commission appointed to inquire into the cause of the dangers to . . . Vessels Carrying Coal . . .* (1897). Evidence given by insurers generally, in particular Q: 2294, 2300, 2315, 2448-9, 2690 and 2773-4. In 1896 it was said that insurance effected in Newcastle was equal to 1/- per ton on coal selling f.o.b. Newcastle at 8/- (AAC Out Desp. 724, p. 7).

from abroad is in funds and it is not everyone who can place themselves in that position by drawing against coals after the experience of Banks in connection with the East . . . your objection [i.e. to giving credit] may be met by putting something on such sales as to cover interest".[29] Another letter to the same company a year later from a shipping merchant testily declares that the writer has transferred his custom to another company because they accept his promissory notes at four months,[30]

> "which in nine cases out of ten is not dated until a month after the coals are delivered [i.e. to him], so that in reality I receive five months credit . . . You will see very clearly that a reduction of 2d. per ton in the coal [as offered by the A.A. Company] is not by any means equivalent to a five months credit, particularly when I send such large quantities away to distant markets from which I cannot possibly get a return in under six months."

A more significant force in the erosion of coal company resistance to credit transactions was the establishment of London as a clearing centre for overseas orders. As noted above, this developed an early importance and ultimately became the normal pattern of trade. Inevitably this required some period of credit. In the early years, when direct orders for clients were being met, payment was made by the London office of the consumer. The order from the Madras Railway Company received by the A.A. Company in 1872, for example, provided for payment by draft at 30 days on the London office of the Railway Company, the draft to be accompanied by duplicate invoice and bills of lading. Later, when direct orders from a consumer gave way to contracts arranged by shipping merchants in overseas markets through their "corresponding" houses in Britain, payment was made either by draft on the "corresponding" houses or, in some instances, by means of bills drawn on acceptance houses in London.[31] Convenience alone does not seem to explain the selection of London as a venue for payment. It is noteworthy that even J. & A. Brown, the large N.S.W. colliery company, which from the 1890s onwards was also functioning as shipping agent for other N.S.W. coal companies in overseas markets, required bills for the value of coal supplied to be drawn in favour of their London office. Concentration on London may thus suggest that exchange rates between London and the various overseas markets exploited by the N.S.W. coal industry were more favourable than between these markets and N.S.W. direct. No one period of credit seems to have been developed although bills were drawn usually at between 30 and 90 days sight, rarely longer. On occasions during depression in overseas markets longer periods might be sought: in 1907, for example, the "best houses" in San Francisco were asking for 12 months credit.[32]

[29] AAC HMB 7.
[30] AAC CC-M 4.
[31] Eg. bills obtained by a San Francisco merchant on Lazard Frères drawn on Lazard Brothers of London (AAC ADM.10).
[32] AAC In Desp. No. 933, pp. 5-6.

Partial financing of the overseas coal trade by coal companies took another form also, the granting of cash advances to ships loading their coal. From a very early date when charters were being arranged in London, charter parties provided for an advance to be made to ships to help defray port dues and incidental operating expenditure. The arrangement normally involved paying a specified sum to a ship's captain and endorsing the bills of lading to this effect. On occasions the sum advanced was deducted from the freights due at the port of discharge. Reimbursement of the coal companies was usually effected by adding the sum to amount due for the coal and drawing on the London office of a consumer or on a merchant house there, interest at 5% often (though not invariably) being added. The use of coal companies to make cash advances to ships may suggest that local shipping agents were unable (or unwilling) to find operating capital on the scale required. Some support for this may perhaps be adduced from the entry into ship agency work of two large N.S.W. coal companies, the A.A. Company and J. & A. Brown, (the only instance, other than J. & A. Brown's assumption of the role of shipping merchants, of horizontal integration by N.S.W. coal companies in the export sector of their trade). The Browns were acting as ship agents from at least the early 1890s, the A.A. Company only from 1907 or 1908. By 1914 these two firms with one other agent (Howard Smith & Coy. Ltd., interstate ship owners) seem to have controlled most, if not all of the agency work attaching to overseas coal carrying. The entry of the A.A. Company into ship agency work marks a change in the method followed by this company to obtain re-imbursement for advances made to ships destined for one market at least, albeit the most important at this time. Advances were to be met by the ship's draft on the Valparaiso shipping merchant at 60 days; the A.A. Company in N.S.W. sold these for cash to the local branch of the Bank of Australasia who, in turn, drew on the main London shipping merchant in the overseas trade in N.S.W. coal.[33]

The forms of commercial organisation evolved survived World War I. Throughout the twenties the records of the A.A. Company testify that the N.S.W. overseas coal trade was still being organised in London. The trade itself, however, never recovered after the war. Excepting the year 1921, when 1913 totals were almost reached, exports dwindled rapidly to an insignificant total. For a time the fulfilment of bunkering contracts for overseas vessels yielded some alternative to the interstate trade. These contracts also were arranged in London, details of arrival dates and quantities required being forwarded to N.S.W. But bunkering contracts also declined in volume and importance with the switch to oil as a bunkering fuel. From then the stagnating N.S.W. coal industry was forced to rely solely upon its interstate trade.

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[33] Ibid., No. 941, p. 4.

APPENDIX I

DISTRIBUTION OF NEW SOUTH WALES COAL EXPORTS 1861-1914 ('000 TONS)

(Quinquennial Averages)

Period	New Zealand	Pacific Isles	Asia	North America	Central & South America	Others	Totals	
							Incl. New Zealand	Excl. New Zealand
1861-1865	54	8	49	15	2	10	138	84
1866-1870	90	21	130	53	6	6	304	215
1871-1875	117	44	162	106	3	8	441	324
1876-1880	159	50	161	106	6	6	487	328
1881-1885	166	83	257	194	50	13	764	598
1886-1890	156	96	238	339	131	11	970	814
1891-1895	163	137	182	289	266	21	1,057	894
1896-1900	171	235	267	235	449	17	1,374	1,203
1901-1905	262	404	233	200	567	55	1,721	1,459
1906-1910	238	414	421	227	800	9	2,108	1,870
1911-1914/15	358	241	398	130	693	6	1,827	1,468

SOURCE: *N.S.W. Statistical Registers,* except for 1903, taken from *The N.S.W. Year Book.* After 1913 the year changes from the calendar to the financial year, 1 July to 30 June.

NOTES

THE "BUILT-IN-STABILITY" OF THE AUSTRALIAN SYSTEM OF TAXATION, 1943-1959

In any system of taxation cyclical movements of the national income are damped by automatic compensatory fluctuations in yields of taxes.

This "built-in-stability" arises from the fact that income is the base on which income taxes are assessed.Changes in income automatically change the tax-base and, with given statutory rates, there will be corresponding changes in the yield.

The revenue from indirect taxes may also vary counter-cyclically with changes in income. At a given level of income and at given statutory rates this yield is determined by total consumer expenditure on goods subject to indirect taxes. Thus movements in the yield of indirect taxes are related to movements in income not directly, but *via* changes in expenditure.

Certain transfer payments, notably unemployment benefits, also change automatically in a counter-cyclical manner.

The degree of responsiveness of changes in the total yield of taxes to those in income, given the marginal propensity to consume, depends on the statutory rates and the pattern of tax-sources. A system which largely relies on steeply progressive direct taxes, particularly company taxes—company incomes being highly volatile—would possess, *ceteris paribus,* a relatively greater degree of "built-in-stability" than a system based predominantly on indirect taxes.

The degree of this stability for the economy as a whole may thus be expressed in terms of the average rate of taxation (r)[1], the yield-elasticity of income (E) and the marginal propensity to consume (c). While the values of E and r are normally different for various taxes, the marginal propensity to consume may be the same for the whole system. If this is the case then, strictly speaking, c is a constant and E and r are variables.

In a simplified situation the degree of "built-in-stability" may be measured by means of the following formula[2]:—

$$b = \frac{cEr}{1 - c + cEr} \quad .. \quad .. \quad .. \quad .. \quad (1)$$

The parameter b is a measure of the degree to which the national income is prevented from falling or rising because of the existence of "built-in-stability". In reality c and r[3] are positive and c takes inter-

[1] The result is the same whether one employs the marginal or the average rate of taxation. See, Musgrave R. A. and Miller M. W., "Built-in-Flexibilty", *Readings in Fiscal Policy,* pp. 379 and 380, and footnote 2 on p. 380.

[2] Used by Musgrave and Miller (*loc. cit.*) in their study of the "built-in-flexibility" of the system of taxation of the United States.

[3] In a special case where transfer payments (negative taxes) exceed taxes, r could be considered as having a negative value.

mediate values between 0 and 1. If E is also positive for the economy as a whole, then the value of b varies between 0 and 1. When it is equal to zero, this means that the system of taxation has no "built-in-stability" at all; when it is equal to unity, then this stability is perfect. As in reality the marginal propensity to consume is never equal to unity, the "built-in-stability" cannot be perfect.

The purpose of this study is to estimate the degree of "built-in-stability" for various types of taxes in the Australian system. The first step in the statistical calculation of the parameter b was an estimation of its value for the personal income tax.[4]

The value of the variable E_p was obtained by correlating the series of personal income before taxation (Y_p) with the series of the yield of the personal income tax (T_p).[5]

The relevant regression equation is given below.

$$\text{Log } T_p = 1{\cdot}186 \log Y_p - 0{\cdot}001 \qquad (r = 0{\cdot}752).$$

The coefficient of regression of log T_p on log Y_p is the estimated value of E_p.

The average rate of taxation—r_p—was computed from the ratio of cumulative T_p/Y_p and its estimated value is 0·101.

The value of the marginal propensity to consume—c_p—was taken from a study by H. W. Arndt and B. Cameron[6]—it is 0·959. This estimate was obtained for the post-war period on the hypothesis that consumption in Australia is a function of *non-farm* disposable incomes. In the present study it is assumed that the value of the marginal propensity to consume—equal to the Arndt-Cameron estimate—is the same for various kinds of taxes examined.

Substituting the values of c_p, E_p and r_p in the formula (1) above, the value of the parameter b_p thus obtained is 0·735.

This figure suggests that, during the period under examination, some 70 per cent of the cyclical movements in the national income have been prevented from occurring by the "built-in-stability" of the personal income tax. However, this interpretation is valid only in a simplified situation. The principal simplifying assumptions are as follows:—the expenditure of the Government has been constant since 1943; the level of private investment has not been affected by taxation; revenue from taxation has been entirely derived from a personal income tax and, finally, company income has been negligible.

The measurement of the parameter b was next attempted for the entire private sector of the economy, that is, for both the personal and

[4] The required statistical data for all series used in this study were obtained from the relevant issues of *National Income and Expenditure* (Commonwealth Government Printer).

[5] The time trends were eliminated from all the series of variables. The data actually used in the regression analysis were the deviations of the various series of officially recorded observations from their respective linear trends. At no time were lagged relations or first differences used.

[6] "An Australian Consumption Function", *The Economic Record*, No. 64, April, 1957.

company income taxes. For this purpose companies were treated as unincorporated businesses. This method is rough but it minimizes complications. The estimated value of E_{p+c} is given below.

$$\text{Log } T_{p+c} = 1{\cdot}020 \log Y_{p+c} - 0{\cdot}008 \qquad (r = 0{\cdot}764)$$

where T_{p+c} stands for the sum total of the tax yields of personal and company taxes and Y_{p+c} for the personal income before tax (inclusive of dividends received) plus company income before tax (after the payment of dividends). The estimated value of r_{p+c} is 0·132. The estimated value of the parameter b_{p+c} is 0·763. It is higher than the corresponding value for the personal income tax.

A statistical estimation of the value of the parameter b for all indirect taxes was next attempted. The calculations were simplified by assuming that these taxes are personal income taxes although they are paid on the basis of expenditure. Moreover, no adjustment was made to take account of the complications arising from the fact that indirect taxes are reflected in the price level of goods sold on the market.

The value of E_i was obtained by correlating the yield of indirect taxes (T_i) with the personal income before tax. The resulting regression equation is as follows:—

$$\text{Log } T_i = 0{\cdot}123 \log Y_p - 0{\cdot}001 \qquad (r = 0{\cdot}369).$$

The value of E_i, as might have been expected, is considerably lower than that of either E_p or E_{p+c}.[7] The estimated value of r_i is 0·169. The resulting value of the parameter b_i is 0·331 and it suggests a very low degree of "built-in-stability" of all indirect taxes in the Australian system.

Finally, employing a similar method, the value of the parameter b was estimated separately for the excise taxes. It is notable that the yield-elasticity of income is negative, namely, — 0·016. The value of r_x is 0·038 and the resulting magnitude of the parameter b_x is very small indeed and negative, viz., —0·014.[8]

[7] During the period under examination income tax rates have been reduced and indirect tax rates increased. These changes, probably, have narrowed the difference between the yield elasticity of direct taxation and that of indirect taxation.

The low coefficient of correlation for indirect taxes (0·369—less than 0·10 degree of probability according to Fisher R. A. and Yates F., *Statistical Tables for Biological, Agricultural and Medical Research,* (Oliver and Boyd), Table VI.) presumably reflects the fact that the yield of indirect taxes, at given rates, varies with consumption rather than with personal incomes. Consumption in Australia, as suggested by Arndt and Cameron, appears to be related functionally to *non-farm* incomes. In other words, the low value of the correlation coefficient in question may, to some extent, reflect the stability of consumption in the face of pronounced fluctuations in farm incomes.

[8] When the value of $E\left(\frac{dT}{dY}\frac{Y}{T}\right)$ is negative, given r and c positive, then the value of the parameter b may also be negative. It will actually be negative and will vary between 0 and minus infinity when the value of E is between O and $-\frac{1-C}{Cr}$; this critical value of E is obvious from formula (1). It may be of interest to observe that the value of b is indeterminate when $E = -\frac{1-C}{Cr}$.

All the results obtained in this study must be interpreted with the care commensurate to the simplifications made. Moreover, it will be appreciated that the statistical method used is subject to limitations.[9]

The "built-in-stability" of the personal and company income taxes appears to have been of some importance in maintaining stability of the national income in Australia. The increase in the value of b from b_p to b_{p+c} may be accounted for by the fact that company incomes respond to changes in the national income more readily than personal incomes. It may be of interest to point out that the yield of company taxes has represented since 1943, on the annual average, some 15 per cent of the total yield from all taxes; the corresponding figure for personal income tax is 32 per cent.

The value of b_l (and b_x), on the other hand, suggests a low degree of stability of indirect taxes. Since 1943 the yield derived from these taxes has represented an annual average of 53 per cent of the total yield from all sources of taxation.

The statistical evidence obtained in this study does not support the view[10] that the automatic compensatory movements in the tax-yields could, to any significant extent, stabilize the income on their own.

It appears that in the Australian case the value of the parameter b for the economy as a whole—an average, for instance, of b_{p+c} and b_l is 0·547—is largely due, first, to the conspicuous insensitivity of yields of indirect taxes to changes in income and, secondly, to the high proportion that the yield of these taxes represents of the total yield. One may add that the low share in the total yield of that

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The possibility of E taking a negative value for the system of taxation as a whole, perhaps, exists in some underdeveloped countries in which the revenue is almost entirely derived from indirect taxation. Assuming that the parameter b is negative for the economy as a whole, then the automatic movements in the yields of taxes, when income changes, have actually distabilizing effects. Thus the fluctuations in income during the upswing and downswing are enhanced instead of being prevented. As the degree of the "built-in-instability" (negative b) varies from 0 to minus infinity, there is, in theory, no limit to the destabilization that may occur. The degree of destabilization will, however, depend on the value of the marginal propensity to consume. This appears to be very high in the majority of underdeveloped countries. It can be shown mathematically that when the c is very high a slightly negative E for the system of taxation as a whole results in a high degree of "built-in-instability'. (The author is indebted to Mr. C. A. Wilkins of the University of New South Wales for his help with regard to this footnote.)

[9] The limitations of the correlation analysis of historical time-series in economics are well-known. See, *inter alia*, Orcutt J. H., "Measurements of Price Elasticity in International Trade", *Review of Economics and Statistics*, Vol. XXXII, No. 2, 1950; Orcutt J. H. and Cochrane D., "Application of Least Squares Regression to Relationships containing Autocorrelated Error Terms", *Journal of the American Statistical Association*, Vol. 44, 1949; Durbin J. and Watson G. S., "Testing for Serial Correlation in Least Squares Regression", *Biometrica*, Vol. 37, 1950.

[10] For an exposition and discussion of this view see, *inter alia*, Friedman M., "A Monetary and Fiscal Framework for Economic Stability", *American Economic Review*, June, 1948, and Bach G. L., "Monetary Fiscal Policy Reconsidered", *Readings in Fiscal Policy*, pp. 248 ff.

of company taxes—apparently highly responsive to changes in income —also partly accounts for this situation.[11]

It follows that the degree of the "built-in-stability" in question could, if so desired, be improved by changing significantly the combination of sources of revenue from taxation in favour of direct taxes (such a change would not be beyond the control of the government). Given the pattern of tax-sources the degree of this stability could, moreover, be improved by an appropriate adjustment in the statutory rates of taxes. In particular, a greater degree of progressiveness of direct taxation would, most likely, bring about the result in question.[12]

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[11] A broadly similar result obtained by Musgrave and Miller in their study of the United States (*loc. cit.*) for the period 1929-1941 is 0·358. The value of c used in their study (0·65) is much lower than the Arndt-Cameron estimate of c for Australia used in the present study.

[12] There exists a possibility of adjusting the statutory rates in a counter cyclical manner. Thus these rates could be low at low income-levels and vice-versa. But such timing of statutory rates differs essentially from automatic compensatory movements in yields of taxation due to 'built-in-stabiliy'. In fact, it amounts to a discretionary fiscal policy.

The conflicts which would arise from the policy of adjusting rates of taxation so as to maximise the degree of "built-in-stability" are obvious. The most important ones would be between this policy and incentives to investment, risk-bearing and work.

THREE HIRE PURCHASE SURVEYS

These surveys were conducted in the Newcastle, New South Wales, area during 1956 and 1957. Two were concerned with consumer use of, and attitude towards, hire purchase credit. The third dealt with retailer experience in offering the credit. The consumer surveys were carried out by means of the public opinion interview method. In this the writer was assisted by Mr. B. Johns and an instructed group of students. In the 1957 survey, 905 persons completed answers and in 1956, 642 persons responded. The retailer survey was made by post. In all, 52 dealers engaged in consumer durables selling responded.

Given below are certain of the more definite conclusions which emerged from the consumer surveys.

(1) The use of hire purchase by family-income category increases as income increases until the higher categories, (over £2,000 p.a.) are reached. In these latter the frequency of hire purchase use declines as income increases. Similar patterns emerged in surveys conducted in the United Kingdom[1] and the United States.[2] In the Newcastle survey the most intensive use of hire purchase was found in the £1,500-£2,000 p.a. group, where 41·9% had recently used the credit. The lowest use was indicated in the under £700

[1] K. H. Straw, "Consumers' Net Worth", *Bulletin of the Oxford University Institute of Statistics*, Vol. 18, No. 1, Feb., 1956.

[2] *Federal Reserve Bulletin*, June, 1956, p. 620.

p.a. group where 24·1% returned an affirmative answer, and the over £2,500 p.a. group where only 17·2% of the replies received were affirmative. Of all groups surveyed, 33·9% of the answers received were affirmative.

(2) The patterns of use of hire purchase by family-occupation group are again similar in the Newcastle, United Kingdom and United States surveys. Highest frequency of use is among families of industrial workers, then follows those engaged in educational, clerical, and sales pursuits. Lower again is the frequency of use of hire purchase among the self-employed. Use of hire purchase by retired persons and pensioners is negligible.

(3) General approval of hire purchase as "a good thing for the average Australian" was expressed by 52·8% of those responding. Definite disapproval was registered by 42·1%. There was no significant difference between the different occupational groups in the proportions approving and disapproving.

(4) When faced with a choice of a number of sources of credit only 10·0% indicated hire purchase as their preferred source. Commercial bank loans are most clearly preferred. Retailer open account credit is also, but less clearly, preferred to hire purchase. However the use of hire purchase is favoured rather more than recourse to a personal loan company.

(5) In the purchase of particular consumer durables, 24·8% of those surveyed indicated that they would use hire purchase even though they were able to buy for cash.

(6) Those surveyed were asked to indicate their orders of preference in a list of those durables most commonly obtained by means of hire purchase. Preferences were to be indicated in terms of the durable's contribution to "comfortable family living". Refrigerators were most preferred, then followed washing machines and radios. Cars were ranked somewhat lower. The two remaining articles on the list, radiograms and television sets, were accorded the lowest ratings. The order of preference and the relative importance given to each article did not alter significantly between different occupation groups.

The following conclusions are drawn from the results of the survey of retailers of motor vehicles, home appliances and furniture. These dealers were asked to report on their experience during 1955-56.

(1) In the actual financing of hire purchase credit, a marked difference was apparent among retailers of different types of durables. All motor vehicle dealers surveyed used the services of an independent finance company. Only 30% of the furniture and home appliance dealers used this form of financing. Of the motor vehicle dealers, 21% had organised their own finance company as against 10% among the other dealers who had done so. The use of own company funds for financing hire purchase was more marked among the furniture and home appliance dealers than among retailers of motor vehicles. The

respective percentages were 65% and 29%. Finally in the matter of financing dealer stocks on hire purchase it was indicated that while 45% of motor vehicle dealers had stock which was so financed, no furniture or home appliance dealers had this wholesale finance arrangement.

(2) Repossession rates were low. Sixty-three per cent of all dealers indicated that no repossessions had been made. Only 4% of dealers indicated a repossession ratio (number of repossessions to number of hire purchase transactions) of over 2%. Used motor vehicle dealers showed somewhat higher repossession ratios than new vehicle dealers.

(3) The unit price of an article has considerable bearing on the frequency of its purchase by means of hire purchase, as might be expected. However, the relationship does not appear to be a direct one of increasing cost and increasing frequency of hire purchase use. In the case of home appliances and furnishings the number of hire purchase sales as a percentage of total sales increases with unit cost. Thus this percentage was between 75% and 95% for such items as refrigerators, washing machines and radiograms. However in the case of smaller furnishing items and smaller home appliances the percentage ranged between 10% and 40%.

With motor vehicles it seems that the frequency of use of hire purchase tends to decrease as price increases. In almost every case a greater percentage of used vehicles was sold on hire purchase than new vehicles. So that over the entire range of durables the frequency of hire purchase use may be described as increasing with price, to reach a peak with the more costly home appliances and the cheaper motor vehicles. Thereafter it declines. This decline can be explained in part by the purchase of a significant proportion of new vehicles by business firms and families in the higher income categories who can pay cash or find alternate sources of credit.

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NEWS AND NOTES

Thanks to the bequest of a former member of the Victorian Branch, the Economic Society of Australia and New Zealand has available £100 as a prize for an essay competition. The essay should be in the general field of Australian or New Zealand applied economics, and should be about 5,000 words. The Society hopes to obtain entries which represent original applied economic research, and which either have been published or are in publishable form. Entrants should be under 30 years of age on 31st March, 1962, the closing date of the competition. Entries, or enquiries about the competition, should be addressed to: The Secretary, Economic Society (Victorian Branch), Faculty of Economics and Commerce, University of Melbourne, Parkville, N.2, Victoria.

We draw readers' attention to the recent formation of The Australian Society for the Study of Labour History. Objects of the Society are to encourage study, teaching, research and publication in the field of labour history, and to encourage the preservation of labour archives. Further information may be had from The Secretary, Mr. B. D. Shields, Australian National University, Canberra, A.C.T.

In April, 1961, The Victorian Branch of the Economic Society of Australia and New Zealand conducted a Forum on *Land and Building in the Sixties* at which the following papers were presented: A. R. Hall, *The Requirements of a Growing Economy in the 1960's;* W. V. Lightfoot, *The Demand for Land in the 1960's;* D. L. Elsworth, *Trends and Problems in Industrial and Commercial Building;* J. A. Hepburn, *Town Planning in the 1960's.* Copies of the first three papers are obtainable from the Secretary at 1/- each, or 2/- each posted.

BRANCH SECRETARIES

New South Wales: R. R. Clark, c/o The Mutual Life & Citizens' Assurance Co. Ltd., Box 1598, G.P.O., Sydney, N.S.W.

Victoria: Mr. G. Bills, Department of Economics, University of Melbourne, Parkville, N.2, Victoria.

Queensland: C. P. Harris, Department of External Studies, University of Queensland, St. Lucia, S.W.6, Queensland.

South Australia: Mr. D. H. Whitehead, Department of Economics, The University, Box 498 D, G.P.O., Adelaide, South Australia.

Western Australia: G. A. Bartlett, c/o Administration, University of W.A., Nedlands, Western Australia.

Tasmania: D. E. Kirby, Box 665E, G.P.O., Hobart, Tasmania.

Canberra: K. Sloane, Department of Economics, School of General Studies, Australian National University, Canberra, A.C.T.

Wellington: P. S. Stannard Esq., c/o Bowden, Bass & Cox, Public Accountants, P.O., Box 986, Wellington, New Zealand.

Auckland: Mr. V. Argy, University of Auckland, P.O., Box 2175, Auckland, New Zealand.

Christchurch: N. L. McBeth, c/o "Press", The Square, Christchurch, New Zealand.

REVIEWS

Central Banking in South and East Asia. By GETHYN DAVIES. (Hong Kong University Press, Hong Kong, 1960.) Pp. xi + 194. 51/3 Aust.

This symposium on central banking in South and East Asia, edited by Dr. Gethyn Davies, fills a marked gap in the literature on the subject of central banking in under-developed countries and is therefore greatly to be welcomed. These contributions from central bank research directors and other economists of high repute constitute most useful accounts of central banking in eleven Asian countries, which include Japan, Korea and Formosa but exclude Thailand.

The work is a comparative study, with separate chapters for each country, of the objectives, powers and methods of the various central banks (most of which were set up after the second world war) together with some description of the institutional framework within which they have to operate. It succeeds in drawing attention not only to the many fundamental similarities between the various banking systems, but perhaps even more strikingly to their many contrasts. The book shows clearly how the different economic and political backgrounds of these countries and consequently their different main objectives have in turn led to differences in central bank powers and policies. Thus the methods of central bank control which were originally developed in the more advanced countries of the West have been adapted and modified—though not always very successfully—to suit the particular circumstances of each of these under- or semi-developed countries of the East.

The chapters differ considerably in length and to some extent in quality, but they should all prove of great interest to the Australian student of central banking in less advanced countries. Lacking a developed capital market, recourse must be had, for the purpose of credit control, to various types of reserve and/or liquidity ratios as well as to direct selective controls, often taking the form of credit ceilings for particular purposes. The usual magnitude of balance of payments fluctuations, however, renders effective stabilisation of the domestic economy out of the question and major reliance in this respect has to be placed on fiscal rather than monetary policy.

In most of the countries in this area, therefore, the role of the central bank appears to be primarily to assist in economic development, either through direct provision of finance to governments and other financial intermediaries or through the establishment and development of suitable financial institutions. How the different central banks attempt to achieve this aim, together with reasonable stability, makes interesting reading.

One final note of criticism, however. The book sells in England

for 27/- stg., whilst the Australian price is 51/3. Is such gross price discrimination really necessary and justifiable?

P. W. SHERWOOD

Newcastle University College.

Essays on Economic Stability and Growth. By N. KALDOR. (Duckworth, London, 1960.) Pp. 302. Price not stated.

This is a collection of papers written by the author over the last twenty odd years and is a product of the "intellectual revolution set in train by the publication of . . . the *General Theory*".

It shows the usual trend from preoccupation with the details of the *General Theory*—in this case with liquidity preference and interest theory—through consideration of economic stability and the trade cycle to some fairly recent articles on economic growth.

Most of the essays have already been published in readily available form though there are some exceptions: an article on own rates of interest and one on the characteristics of economic development.

One wonders at the purpose of such a collection firstly because there is no particular thesis being developed throughout the essays and secondly because students of the topics covered would hardly be wanting to read Kaldor in isolation—they would also be consulting other authors whose work would be found in much the same journals from which these contributions have been extracted. This book gives only part of the picture. In it we have Kaldor and what he thought of other people but practically nothing of what others thought of Kaldor. A much more useful book would have been a collection of articles by a variety of authors writing on one or several of Kaldor's topics, showing the interplay of ideas which conditions the development of theory: Kaldor in context, as one might say.

What is a reviewer to do with a series of articles, most of which have already been subjected to criticism, except, perhaps, to point to an apparent conversion which cannot have gone unnoticed? To the early Kaldor, the accelerator was a crude tool, worthy only of discard. To the Kaldor of the last essay in the book, however, the desired stock of capital is made to depend, in part, on the level of activity. Hence desired additions to the capital stock will vary with the rate of change of the level of activity. The time period is so selected that the desired additions can, in fact, be effected: thus investment varies with the rate of change of output.

C. S. SOPER

The University of New South Wales.

Inflation. By T. WILSON. (Basil Blackwell, Oxford, 1961.) Pp. 280. 30/- Stg.

Professor Wilson spends the first one hundred pages of this book in discussing the nature of inflation. He is mainly concerned to dis-

tinguish between cost and demand inflation and to show how they can be mutually reinforcing. Progress is leisurely; the reader is led gently up logical hills and the post-war experience of Britain, the United States and Europe is pointed out on the way. In the rest of the book Professor Wilson surveys the usefulness of monetary, fiscal and wages policy and suggests the best way in which they can be deployed. He finds the Radcliffe Committee ". . . a little too glum to be altogether convincing" and suggests that all three counters to inflation have their place although his National Council on Wages and Prices is a rather ghostly body croaking, one fears, ineffectually. The uninspired undergraduate sometimes reaches similar "statesmanlike" conclusions but the argument here is very able and Professor Wilson is especially deft in revealing inconsistencies in the criticisms of monetary policy.

The basis for his moderate optimism lies in Professor Wilson's feeling that monetary and fiscal policy can be successfully used against demand inflation and that in the absence of demand inflation there is less to fear from cost inflation than has often been supposed. However, no satisfactory reasons are given why in a closed economy general Union pushfulness will be resisted and if this is true of *each* economy the existence of competition from foreign goods does not provide the ready answer to cost inflation that Professor Wilson seems to ascribe to it. It may be that the emergence of low cost competitors will check cost inflation in the more advanced countries even if wages in the low cost countries are rising rapidly but this is not an argument that Professor Wilson uses and his optimism is therefore not very closely related to his discussion of the working of the economy.

The student of the Australian economy may be amused by Professor Wilson's fondness for "the devil he does not know" in the shape of wage claims presented at the same time each year but, in the light of the general analysis presented here, he may wonder afresh whether even a sensible award wages policy is an effective guard against cost inflation in Australia unless it is allied to pressure by tariff adjustment or other means upon the industries with above average productivity growth to pass on cost saving by means of lower prices rather than by higher over-award wages.

D. WHITEHEAD

University of Adelaide.

Exercises in Economic Analysis. By JOAN ROBINSON. (Macmillan, London, 1960.) Pp. xx + 242. 6/- Stg. (paper). 12/- Stg. (cloth).

The Accumulation of Capital is a difficult book to read, partly because, as one reviewer complained,[1] there are very few "pictures" in it, even though Mrs. Robinson is a leading member of the "words and pictures" school of economic analysis. This defect has been

[1] Kelvin Lancaster, "Mrs. Robinson's Dynamics", *Economica* (New Series), Vol. XXVIII, No. 105, February, 1960, p. 66.

remedied in an ingenious way in her new text book, *Exercises in Economic Analysis,* by asking readers to draw the "pictures" themselves, using her instructions. Students reading the book will be able to establish for themselves important propositions in the following branches of economic theory: production and accumulation, accumulation and distribution, elementary demand theory, the theory of the firm, and resource allocation in a socialist economy. It is a most useful text book for teachers of economics also, not only because of the witty, illuminating and stimulating passages of many of its pages, but also for its (in the main) clarity of exposition and wide coverage.

The level of difficulty varies widely from part to part. Parts 3 and 4 ("An Exchange Economy" and "Capitalist Industry") could form the basis of a first year course in value theory and theory of the firm. Parts 1 and 2 ("Production and Accumulation" and "Accumulation and Distribution"), which contain the most difficult (and original) portions of the book, are suitable for third and fourth year honours students, preferably working in small tutorial classes. Part 5 ("Rational Price System") would be excellent preliminary reading for either a pass or honours course on welfare economics in the third or fourth year. In effect, Part 5 is a simplified and easy-to-read version of Lerner's *Economics of Control.*

Three types of economies are considered in the book, viz., a peasant economy, a socialist economy and a competitive capitalist economy. The first two are used "mainly in order to throw light upon (the third) by way of contrast". The capitalist economy has a consumption goods and an investment goods sector and three classes, viz., rentiers, entrepreneurs, and wage-earners. The level of activity and the distribution of income in both the short and the long run are shown to depend upon the energy and desire to accumulate capital of the entrepreneurs, and on the savings propensities of the three classes. At each stage of the argument, an attempt is made to show what patterns of behaviour by individual economic units will be consistent with the macro-economic relationships of the particular economy concerned. The importance of stating the units in which economic quantities are measured is stressed. Three general methods of analysis are used—the comparison of different economies at the same point in time, the comparison of the same economy at different points in time, and the analysis of change over time in an economy. This ensures that time is "taken seriously".

There are a number of omissions, errors and misprints. The elimination of inferior techniques described in the instructions for drawing figure 8 (pp. 45-47) is not enough to ensure that "the marginal efficiency of investment falls off as the degree of mechanisation . . . achieved becomes greater". This condition only means that the average product per unit cost of investment falls; to ensure that the marginal product falls, it must be assumed that the average product does not approach a minimum. It needs to be made explicit

that the areas AM.OC and AM.OL (pp. 59-60) are the marginal products of land and labour multiplied by their respective total amounts, only if constant returns to scale are assumed. On p. 132, the last sentence of the instructions for drawing figure 14 (cont.) should read "the presumption is that when (at the new prices) his purchasing power is only a little less than AC he is worse (not 'better') off and when it is only a little more than AC he is better (not 'worse') off." In figure 23 (p. 186) as average prime costs fall the angle at G grows smaller (not "greater"). On p. 218, the reader should be referred to figure 7, not figure 12. (Incidentally, it would be easier to find the many cross references if the relevant page numbers were given as well as the relevant sections.)

Pages 39-44, 68-69, 72-74, 80-82 and 91-92 may provide additional clues for those readers of Mrs. Robinson's recent writings who find it hard to understand *exactly* why she thinks "that the marginal productivity theory of distribution is all bosh".[2] Finally, Mrs. Robinson would do readers of the present book a service if she would explain *why* the assumption that the level of investment will be speeded up (discouraged) if the actual rate of profit rises (falls) is different to the assumption that investment is an increasing function of the expected rate of profit which is, itself, directly related to the currently experienced rate of profit (p. 73). (It is assumed that "on the view here adopted" (p. 73) refers to Mrs. Robinson's model.)

G. C. HARCOURT

University of Adelaide.

The Use of Economic Statistics. By C. A. BLYTH. (George Allen and Unwin, London, 1960.) Pp. 249. 28/- Stg.

According to its dust jacket this book is "an elementary introduction to the sources of economic statistics and their uses in answering economic questions. . . . It assumes no knowledge of either mathematics or economic theory." Thus it belongs to the modern *genre of* "do-it-yourself" books, its main purpose being to get the student to dirty his hands with data from the real world rather than to sit remote in an ivory tower of economic or statistical theory.

An example will help to give the flavour. Chapter One starts with the questions: "What have been the changes in production and employment in the (British) cotton industry since the war? What have caused these changes?" The author then lists the major sources of British economic statistics—the *Annual Abstract of Statistics,* the *Monthly Digest of Statistics, Economic Trends* and *National Income and Expenditure.* In effect, the author then says: "Here is the problem; here are the sources; now I will show you how to find the answer."

[2] Joan Robinson, "Prelude to a Critique of Economic Theory", *Oxford Economic Papers* (New Series), Vol. 13, No. 1, February, 1961, p. 58.

Straightway we jump into the *mêlée*. What do we mean by the cotton industry? Does it include both spinning and weaving? What about mixtures of other fibres? Can we add pounds of single yarn to pounds of doubled yarn? And so on. Brief answers are given to these vital questions and we proceed to pick out figures from the "AAS" and the "MDS", discovering on the way that we usually have to piece together series from several issues of the AAS, and possibly the MDS as well.

At length we are ready to draw up a table of "Output of Cotton Industry Products, 1947-58." The table having been drawn, the student is given the following memento: "Table 1·1 above is what is called a *summary* (or *text*) table. It shows the statistics which we have decided are useful in answering our question. . . . All summary tables must have: (1) a title, (2) headings for all columns and rows, (3) a note describing the source of the statistics, (4) a statement of the units of measurement . . . (5) a clear separation of columns. Do not squeeze a table on to a small piece of paper simply because a small piece of paper is the first thing that comes to hand" (pp. 22-23).

The pattern of the book follows along these sorts of lines. First pose a problem. Then list the sources. Then proceed to "solve" by commonsense and simple arithmetic. If in the process we find we need new techniques—graphs, index numbers, scatter diagrams, seasonal corrections—we pull them out of their pigeon-holes and use them, without asking any of the difficult questions about why these techniques are appropriate or whether alternative techniques would be better. The main thing is to get an answer to each problem, to "learn by doing".

Every practising statistician is bound to have a great deal of sympathy for Mr. Blyth's approach. In economic statistics commonsense and simple arithmetic can carry one a very long way; and, if the choice is exclusive, an ounce of commonsense is worth a ton of theory. But is it good enough to teach students of "elementary economics" only to use their commonsense plus a "sharp pencil" for drawing graphs? It seems to me that Mr. Blyth has taken matters to an extreme. If this book were incorported in (or bound up with) another book which gave the classic methods of statistics, it might become quite a good "economic applications" section of a rounded text. But then it would have to drop the pretence of "simple arithmetic" and refer to a few simple formulae. One suspects that the Cambridge students who for five years acted as guinea pigs for this course were, in fact, not so innocent of either mathematics or economic theory as the book implies.

I believe, with regret, that this attempt at "economic statistics made easy" is not a success. And this is so not only because economic statistics *cannot* be made as easy as all that, but because the book itself is, in fact, not an easy one to read. It is more like a research worker's manual than an introductory textbook. It continually comes up against very difficult problems of principle which can only be avoided by deft

swerves or by pretending that the problems do not matter "in this case". The worst chapters are, inevitably, those which deal with scatter diagrams, which are so fatally easy to draw but which demand the highest degree of sophistication to interpret. It is scarcely a consolation to know that the book is intended for students who are "not necessarily going to be either economic or statistical specialists".

H. F. LYDALL

University of Western Australia.

Tropical Africa. By G. H. T. KIMBLE. (Twentieth Century Fund, New York, 1960.) Vol. I., pp. 603. Vol. II., pp. 506. $15.00.

This is a book of unusual construction. It is the product of a seven-year enterprise on the part of the Twentieth Century Fund to produce an "authoritative, truly encyclopedic survey" of tropical Africa: 46 "contributors" each produced working papers, and at various stages six consultants were employed. The whole book, has, however, been written by Dr. Kimble; the working papers are cited, and sometimes quoted, but not *in extenso*, and it is not possible in most cases to identify the material provided by the contributors. This is a pity, since some of these contributors are major authorities in their fields.

Dr. Kimble himself is a geographer, but this book is not a geography. Its twenty-four chapters include only six directly on the natural resources and their development, and the main emphasis of the book is in economic, social and political fields. The discussions of colonial policy, administration and developmental problems range over a wide field and are well-argued. Throughout, the several parts of tropical Africa are kept in good balance: no territory receives excessive treatment, and none is neglected. This is a considerable achievement in a survey that adopts a topical treatment, making use of diverse material that is inevitably grossly unbalanced as between different parts of the area under study.

The publishers claim that this is an authoritative and complete survey, but it is hard to sustain this claim. On some aspects, outstandingly minerals and their development, and transportation, Kimble provides an exhaustive survey—the inventory of mineral resources goes on for more than 60 pages. The rather widely scattered discussion of trade, commerce and development also provides a reasonably complete coverage, even if the basic problems are not really explored. On the other hand, such fragmentary historical material as is presented occurs *passim* throughout the book—often allusions are made which demand a knowledge of African history not presented until much later, if at all. Agriculture receives a treatment that is perfunctory in the extreme, and in no way comparable with the discussion of minerals and industry. Discussion of cash cropping is very brief and highly generalised: there is no detailed presentation of data on agricultural development, African or European. The material on African social

organisation, land tenure and farming systems presented is not merely overbrief and excessively generalised; it is frequently misleading. In his final chapter Dr. Kimble speaks of the impossibility of generalising in Africa, yet in this discussion we find the most sweeping generalisations. The incorrect statement on II 13 that "Every tribal unit, large, medium or small, in the pristine form, is ruled by a chief or paramount chief . . ."—itself contradicted by two specific cases described in the following chapter (II, 67; 77) is typical of a disturbing number.

Dr. Kimble's very brief and popularly-presented account of the natural environment may spring from a deliberate reluctance to parade his craft, but, as with the discussion of social aspects, he totally neglects the results of a great deal of published research, and makes the claim of "authoritativeness" look rather slender.

As a compendium of data on tropical Africa, then, this book is highly uneven: as a review of social, economic and political development in the middle 'fifties it is a much more formidable piece of work. It is no criticism of the author and his contributors that the sudden acceleration of events in Africa during 1960 gives the whole of this discussion an air of unreality: what is presented here is a solid and careful review, perhaps rather paternal in approach, but realistic and unprejudiced, which would have been regarded as forward in its thinking as recently as 1959. One may quarrel with the enthusiasm with which the Federation of Rhodesia and Nyasaland is described as a forcing house of development, neglecting its growing tensions, and also at the manner in which the two major anti-European outbreaks of the first post-war decade—in Madagascar and Kenya—are lightly passed over. One may also look wryly in 1961 at the warmth with which Portuguese and Belgian policies are described, or at the eulogy of a large American rubber plantation in Liberia, which, *inter alia*, pays local chiefs a bonus according to the number of plantation recruits supplied (I, 154). In general, however, Dr. Kimble provides a clear and balanced statement of the position, with which neither liberal nor conservative could seriously quarrel. The only major criticism of this whole extended discussion is the almost total neglect of the Union of South Africa as a factor in the economic and political evolution of tropical Africa: only in dealing with labour migration is the influence of the Union discussed, yet this is at least as important in the southern parts of tropical Africa as external influences from Europe and America which receive extended treatment.

With its high price, this book will have only a limited market in this country; it will be a useful addition to the general literature on Africa, of real value to anyone who seeks to understand the bewildering events in that continent since 1945. As a more specific source of information it cannot, however, be recommended except within limited fields some of which are mentioned above. In no sense does it displace Hailey's *African Survey* (Second edition, 1956) as the most authoritative work on Africa. Likewise in geography, anthropology and agricul-

tural economics it will not displace existing literature. By its semi-popular style, it would seem to be intended for a wider market, but a length of around 500,000 words is no advantage for this purpose. To this reviewer, it appears that Dr. Kimble has fallen between two stools: he has not utilised his space to provide a really thorough and compendious work of information and comment, while the valuable material that the book does contain could more profitably have been presented in perhaps half the length.

H. C. BROOKFIELD

Australian National University.

Interest Rates and Asset Prices. By R. TURVEY. (Allen and Unwin, London, 1960.) Pp. 109. 12/- Stg.

In this little book Mr. Turvey aims at presenting a theory of asset price formation—or interest rate determination—that is simple, related to economic theory and testable. The theory developed is a static partial equilibrium analysis of the demand side of asset price formation. It is an aggregative theory in the sense that intra-sector assets and liabilities are consolidated and demand functions considered for the private sector as a whole. This means that share prices are not explicitly introduced, but Turvey recognises that the demand functions depend upon the preferences for, and amounts of, intra-sector assets.

Starting with the simple choice between bonds and money and with two sectors—the asset owning group and the monetary sector—Turvey shows that the bond preference and liquidity preference theories are equivalent to one another. But he stresses, correctly, the need for taking into account the number of bonds as well as M, since if both change through open market operations the effects will be different from a change in one or other alone.

With income and real assets introduced, there are now three ways of holding wealth and so three asset demand equations. (There are incidentally two obvious minor slips on p. 42). Solving these equations shows that, *ceteris paribus,* the price of bonds or real assets will respond in the accepted manner to changes in supplies and demands.

Turvey constructs a model determining the average yield on the American public debt and proceeds to test it by regression analysis using the post-war period. The results are statistically consistent with the theory; the parameters have the correct sign, their size gives plausible results and the variables give a close fit. Turvey admits the limited nature of all this; it was done "to show the sort of way in which the theory can be formulated to make it apply to a particular problem".

Other topics discussed briefly are the nature of financial intermediaries, the relation between long and short term interest rates and the determination of share prices.

Within the narrow framework of the analysis, Turvey has given an interesting account of the factors determining certain asset prices.

Not everybody however, will be satisfied with a static partial equilibrium approach. Others may demand more attention to an analysis with share prices as the central endogenous variable. Finally there is only passing reference to expectations and the effect of changes in expectations producing structural changes in the demand equations. But Turvey admits there is a lot still to be done and hopes that others will carry on.

G. P. BRAAE

University of Otago.

Demographic and Economic Change in Developed Countries. By NATIONAL BUREAU OF ECONOMIC RESEARCH. (Princeton University Press, 1960.) Pp. xi + 536. $12.00.

Books dealing with the interrelations of demographic and economic factors in low-income high-fertility areas are becoming almost legion, but this is not the case with high-income controlled-fertility areas. In these latter areas the prevailing view has tended to be that population growth is desirable because it stimulates economic growth, although latterly a few economists like J. J. Spengler have strongly asserted otherwise.

This present volume, which is admirably produced and edited and which emanates from 17 papers delivered by leading American demographers (e.g. Notestein, Kirk, Coale) and economists (e.g. Kuznets, Duesenberry, Hoover) at a conference held at Princeton in December, 1958, is a welcome attempt to probe into the nature of demographic and economic changes in "developed" countries. It cannot be said that the book provides a completely satisfactory synthesis of the *interrelations* of economic and demographic factors; the papers tend to be demographic and economic rather than interdisciplinary. But this is not a serious criticism, for almost every paper is of first class quality in its own field, and if insights into the interrelations are not always apparent in the main texts, they can frequently be discerned in the discussions that follow them. Moreover, the contributed papers cover an enormously wide area and frequently provide compact summaries of and comment upon a considerable mass of empirical data and theoretical concepts.

Part I, "The Analysis of Population Change", surveys recent trends in fertility and fertility differentials, has a stimulating economic interpretation of causation in fertility trends, discusses the influence of business cycles on marriage and birth rates, and analyses the relative influences of changes in mortality and fertility on population size and age distribution.

The papers in Part II, "The Economic Effects of Population Change", discuss the significance of changing household size and composition; the relation between population change and aggregate output, demand, prices and the level of employment; labour supply in

relation to different rates of growth, fertility and mortality; the outlook for food and industrial resources; and the demand for services.

This book deserves a central place in the reference shelves of the demographer who is concerned to relate his analysis to economic variables and of the economist whose theorizing strays into demographic realms.

W. D. Borrie

Australian National University.

AMERICAN ECONOMIC REVIEW

Volume L1 September, 1961 Number 4

ARTICLES—

A Theory of Economic Development .. .. Gustav Ranis and J. C. H. Fei
Agriculture in Economic Development .. .. B. F. Johnston and J. W. Mellor
Welfare Criteria for External Effects .. .. E. J. Mishan
Stochastic Reserve Losses and Bank Credit .. .. Daniel Orr and W. J. Mellon
The American Political Economy Club .. .. A. W. Coats

COMMUNICATIONS—

The Golden Rule of Accumulation .. .. Edmund Phelps
The Bethlehem-Youngstown Case .. .. L. S. Keyes
A Theory of Optimum Currency Areas .. .. R. A. Mundell
Contributors to Three Professional Journals .. .. P. A. Yotopoulos

The *AMERICAN ECONOMIC REVIEW*, a quarterly, is the official publication of the American Economic Association. Annual dues or subscriptions are six dollars. Address editorial communication to Dr. Bernard F. Haley, Editor, *AMERICAN ECONOMIC REVIEW*, Stanford University, Stanford, California. For information concerning other publications and activities of the Association communicate with the Secretary-Treasurer, Dr. James Washington Bell, American Economic Association, Northwestern University, Evanston, Illinois. Send for information booklet.

BOOKS RECEIVED

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

BUREAU OF AGRICULTURAL ECONOMICS. *Poultry Management Study in the Sydney Area of New South Wales (Second Annual Report 1958-1959).* (Canberra, 1960.) Pp. 43. Price not stated.

BUSHNELL, J. A. *Australian Company Mergers 1946-1959.* (Melbourne University Press, Melbourne, 1961.) Pp. 223. 37/6 Aust.

DEPARTMENT OF LABOUR AND NATIONAL SERVICE. *The Employment of Chemists in Australia.* (Melbourne, 1960.) Pp. 25. Price not stated.

This is a brief study of the market for chemists other than chemical engineers, pharmaceutical chemists and chemists engaged in teaching. It outlines the rate of growth since the war in the number of chemists gaining degrees or diplomas; indicates the distribution of chemists between different classes of employment; estimates the degree of scarcity of chemists; and looks rather tentatively at the probable state of the market for their services over the next ten years. The number of chemists in employment is expected to increase more than proportionately to the whole work force, but whether rising demand will allow the present scarcity to be overcome is uncertain.

DEPARTMENT OF TRADE. *The Australian Ferrous Forging Industry.* (Canberra, 1960.) Pp. 32. Price not stated.

This publication, in the industry study series, describes the structure, production and capacity of the ferrous forging industry in Australia and estimates the demand for its products and the supply of the specialised factors of production it requires. The survey portrays the industry as being oligopolostic with a very substantial competitive fringe. Other main points are that most firms have considerable excess capacity and, because of this and the durability and high cost of capital equipment, many firms lack up to date equipment and methods of production.

DRANE, N. T. and EDWARDS, H. R. *The Australian Dairy Industry. An Economic Study.* (Cheshire, Melbourne, 1961.) Pp. 321. 84/- Aust.

FOENANDER, O. DeR. *Industrial Conciliation and Arbitration in Australia.* (The Law Book Co., Melbourne, 1959.) Pp. 220, 119. 55/- Aust.

GOLDBERG, L. *Concepts of Depreciation.* (Law Book Co., Australia, 1960.) Pp. 130. 30/- Aust.

RENWICK, C. *The Hunter Valley Economy 1947-1957, Monograph No. 4.* (The Hunter Valley Research Foundation, Newcastle, 1960.) Pp. 16. Price not stated.

ROSENBERG, W. *Full Employment. Can the New Zealand Economic Miracle Last?* (A. H. and A. W. Reed, Wellington, 1960.) Pp. 188. 8/6 Stg.

This book is an examination of "New Zealand's unrivalled record of twenty-two years of uninterrupted, absolutely full employment". After briefly contrasting this record with that of other countries, e.g., U.S.A. and West Germany, and with New Zealand's earlier economic fluctuations, the author discusses the policies of the Labour Government which first achieved full employment in 1939. Later chapters deal with the possibility of a potential threat to full employment from membership of the I.M.F., Foreign Investment in New Zealand, Orthodoxy in Monetary Policy, and other issues. Throughout the book there is an attempt to show the connections between social conditions, politics and economic policy.

SINCLAIR, K. and MANDLE, W. F. *Open Account, A History of the Bank of New South Wales in New Zealand.* (Whitcombe & Tombs, Wellington, 1961.) Pp. 266. 27/6 Stg.

B.—OTHER PUBLICATIONS

ARROW, KARLIN & SCARF. *Studies in the Mathematical Theory of Inventory and Production.* (Stanford University Press, 1958.) Pp. 340. $8.75.

ASSOCIACAO INDUSTRAIL PORTUGUESA. *Portugal E A Cooperacao Economica Europeia (13).* (Estudos de Economia Aplicada, Associacao Industrial Portuguesa, Lisboa, 1960.) Pp. 119. Price not stated.

* Acknowledgement of publications does not guarantee review.

BAIN, J. S. *Industrial Organization.* (John Wiley & Sons, New York, 1959.) Pp. 643. $9.25.

BHATIA, M. S. *Redistribution of Income Through the Fiscal System of Puerto Rico.* (Puerto Rico Planning Board, 1960.) Pp. 49. Price not stated.

An estimate was made of the effect of the government's tax raising and expenditure on various income groups. Both taxation and the effective benefits ratio were found to be moderately progressive. It was concluded that redistribution of income was appreciable; however this was only moderately at the expense of the rich as 75% of the transfer to low income brackets was financed through taxation of non-residents, Federal grants in aid, bond issues and non-tax revenues.

BIDWELL, P. W. *Raw Materials.* (Oxford University Press, 1959.) Pp. 403. 69/3 Aust.

BROWN, A. J. *Introduction to the World Economy.* (Allen & Unwin, 1959.) Pp. 212. 18/- Stg.

DE MOURA, F. P. *Reorganizacao das Industrios.* (Estudos de Economia Aplicada, Associacao Industrial Portuguesa, Lisboa, 1960.) Pp. 36. Price not stated.

DE NAVARRETE, I. M. *La Distribucion del Ingreso Y El Desarrollo De Mexico.* (Instituto de Investigaciones Economicas, Mexico, 1960.) Pp. 99. Price not stated.

FOLIA OECONOMICA CRACOVIENSIA, Vol. I, No. 1. (Academie Polonaise Des Sciences, 1960.) Pp. 85. Price not stated.

GHOSH, A. *New Horizons in Planning.* (World Press Private Ltd., Calcutta, 1960.) Pp. 217. Rs. 10.00. 18/- Aust.

The author examines the use of various planning techniques—including the Leontief and Harrod-Domar models—to planning in underdeveloped countries. The second half of the book is devoted to a study of the Indian five year plans.

HAZLITT, H. (Ed.). *The Critics of Keynesian Economics.* (Van Nostrand, New York, 1960.) Pp. 427. 52/6 Stg.

This miscellany of twenty-two writings critical of Keynesian economics is intended to complement Hazlitt's *The Failure of the "New Economics"* (1959). The editor has included review notices of the *General Theory,* several well known articles, and much nondescript stuff. His own material contributes to the overall effect of fatuous injustice.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *Some Techniques of Development Lending.* (1960.) Pp. 23. Price not stated.

This small booklet presents some of the techniques of development lending which have been evolved by the World Bank. They cover the selection, appraisal and supervision of projects in the less developed countries. Aspects discussed are economic, technical, managerial, organisational, commercial and financial. It is emphasised that judgment, as well as analysis, is often needed.

JOURNAL OF THE INTERNATIONAL COMMISSION OF JURISTS. (Winter, 1959, Spring-Summer, 1960.) (Geneva.) Pp. 252. 15/- Stg.

KEYNES, J. M. *The General Theory of Employment, Interest and Money.* (Macmillan, London, 1960.) Pp. 403. 8/6 Stg. Paper.

KUBOTA, A. *Essais sur Francois Quesnay.* (The Science Council of Japan, Tokyo, 1960.) Pp. 62.

Economics and philosophy are the subject of the two essays, respectively. The former is the interesting one as it deals with the importance of the Tableau Economique in the history of cycle theory. Kubota shows, that when the Tableau is in dis-equilibrium, i.e. when

$$\frac{\text{consumption of wage-goods}}{\text{consumption of luxuries}} > 1 \text{ or } < 1,$$

there are cyclical fluctuations which could prove interesting. He also points out that Quesnay's main concern was with the economic growth of the nation, and that this would occur most rapidly when the expenditure on wage-goods exceeded that on luxuries.

KUCZYNSKI, J. *Die Geschichte der Lage der Arbeiter unter dem Kapitalismus, Teil I. Band 8. Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwort. Dokumente und Studien A zu Band I.* (The History of the Condition of the Workers under Capitalism, Part I, Volume 8. The History of the Condition of the Workers in Germany from 1789 till the present. Docu-

ments and Studies A to Volume 1). (Akademie Verlag, Berlin, 1960.) Pp. 206.

Another instalment of the monumental work by the *doyen* of Communist economic historians. The present volume contains a selection of documents relating to child labour, factory conditions, food prices and several contemporary reviews of Engel's *The Condition of Working Classes in England.*

LYNCH, P. and VAIZEY, J. *Guinness's Brewery in the Irish Economy 1759-1876.* (Cambridge University Press, London, 1960.) Pp. 278. 35/- Stg.

This is a "House" history with a difference. More emphasis is placed on the Irish economy and less on the House of Guinness than might be expected.

In the eighteenth century Irish beer was pretty poor stuff; but improvements followed the removal of the excise duty in 1795. Guinness forged ahead, concentrating on porter and later on stout. Exports to England played a large part in the industry's growth, the final conquest of the home market coming only after the Great Famine and the drawing of the peasants into the cash (and beer) economy. Unfortunately, the story stops before its climax. The next century will be covered by a second volume by different authors.

MUELLER, R. and STEEFEL, E. *Doing Business in Germany.* (Fritz Knapp Verlag, Frankfurt, 1960.) Pp. 160. DM.14.20.

This book, described by the publishers as a "legal manual", is designed to provide those wishing to do business or invest in Germany with a summary of the law likely to affect their operations. It considers legal questions pertaining to contracts, powers of attorney, cartels, companies, competition, labour relations, stock markets, foreign exchange, and taxation. A German-English and English-German glossary is included.

NATIONAL BUREAU OF ECONOMIC RESEARCH. *The Comparative Study of Economic Growth and Structure: Suggestions on Research Objectives and Organization.* (New York, 1959.) Pp. 201. $3.00.

NATIONAL PLANNING ASSOCIATION. *Local Impact of Foreign Trade.* (Washington, D.C., 1960.) Pp. 213. $7.00.

This book, representing the main findings of a study on the Local Impact of Foreign Trade (LIFT), is a study in methods of local economic accounting, and seeks to demonstrate ways of measuring the injury or benefit to a community from foreign trade. The methods used may be applied to other economic problems. The project's objective has been to develop methods of inquiry rather than to establish substantive findings and its recommendations refer to future research efforts rather than to foreign trade policies

RIMMER, W. G. *Marshalls of Leeds.* (Cambridge University Press, London, 1960.) Pp. 341. 42/- Stg.

John Marshall started as a flax spinner in 1788 and by hard work and constantly ploughing back profits created the largest flax business in Britain. But the second generation could not preserve its inheritance; by 1886 the business was dead. Dr. Rimmer's book is a valuable addition to nineteenth century British industrial history.

SCHILLER, DR. K. *Zur Wachstumsproblematik der Entwicklungslander.* (Institut fur Weltwirtschaft an der Universitat, Kiel, 1960.) Pp. 24. Price not stated.

SHAH, K. C. *Pattern of Corporate Savings and Investments.* (Bhatkal, Bombay, 1960.) Pp. 263. Rs. 15.00.

This book examines the financial aspects of the growth of the corporate sector in India during the period 1938-55. The author's main contribution is an analysis of the financial structure of five industries, namely, cotton textile, jute textile, cement, iron and steel, and paper. It should be noted that the corporate sector in India includes many State-owned enterprises.

SPENCE, C. C. *God Speed the Plow: The Coming of Steam Cultivation to Great Britain.* (University of Illinois Press, Urbana, 1960.) Pp. 183. $4.75.

After several decades of experiment, steam-powered ploughing machinery was successfully introduced into British agriculture in the 1860's and remained important until displaced by oil and petrol engines after 1914; the history of steam ploughing, the most important innovation in British agriculture in this period, is well told in Spence's detailed and profusely illustrated book.

STANFORD UNIVERSITY. *Food Research Institute Studies, Vol. 1, Nos. 1 and 2.* (California, 1960.) No. 1, pp. 103. No. 2, pp. 107-281. $2.50.

STEPANEK, J. E. *Managers for Small Industry.* (Free Press, Glencoe, Illinois, 1960.) Pp. 245. $6.00.

This is the fifth of the "Small Industry" series of publications of the Stanford Research Institute. It deals with problems of recruiting and training managers for small industries in newly-industrialising countries. A major theme of the book is that managerial ability is usually the most difficult to develop of the resources necessary for economic progress.

UNITED NATIONS (Economic and Social Affairs). *Economic Developments in the Middle East 1958-1959.* (New York, 1960.) Pp. 125. 10/6 Stg.

UNITED NATIONS (Economic and Social Affairs). *World Economic Survey 1959.* (New York, 1960.) Pp. 250. 21/- Stg.

UNITED NATIONS (Economic Commission for Europe). *Economic Survey of Europe 1959.* (Geneva, 1960.) 21/- Stg.

The World Economic Survey for 1959 contains the customary useful and illuminating description of economic trends during the year in industrial countries, in primary exporting countries and in centrally planned economies. It contains in addition on this occasion an analysis of investment trends and policies during the nineteen fifties in industrialised countries, underdeveloped countries and centrally planned economies. This analysis examines the relationship between investment and growth in various countries, and the part played by public policies—both directly by way of public investment, and indirectly by measures to stimulate private investment. It may be noted that neither Australia nor New Zealand is among the fairly extensive list of countries whose experience is examined; though Canada is included among the industrialised and South Africa among the under-developed countries. It is not clear whether this is for lack of some of the requisite statistics or because the economies of Australia and New Zealand are in some respects different from those of either of the two main groups considered.

The Survey of Europe consists of four parts. The first contains surveys of the European Economy in 1959, both of Western Europe and of Eastern Europe and the Soviet Union.

Part II consists of an analysis of the long-term plans of the Soviet Union and Eastern Europe, with a wealth of detail not otherwise readily available in English.

In Part III there is a comparative survey of the place of the public sector in the various Western European economies, including the part played by their budgets as an instrument of short-term economic policy.

Part IV consists of a survey of the problems of economic development in Southern Europe and in Ireland, and of their problems of internal and external balance. And appendix on recent experience in raising agricultural output in Yugoslavia is included.

UNITED NATIONS (Economic and Social Affairs). *Patterns of Industrial Growth 1938-1958* (New York, 1960.) Pp. 480. 60/6 Stg.

This statistical publication, released by the United Nations in September, 1960, is the first in a new series which will be issued periodically. It contains a great deal of statistical information, almost entirely in tabular form, accompanied by textual explanation. Two languages (English and French) are used throughout the book.

The first chapter is introductory, chapters two and three deal with The Growth of Output and Employment and The Changing Structure of Production and Employment and the remainder of the book, some 350 pages, is devoted to the presentation of basic statistics for 75 different countries. There are some 40 pages of appendices dealing with conceptual issues, industrial production indexes and estimates of value added in current prices.

UNITED NATIONS (Statistical Office). *Retail Price Comparisons for International Salary Determination.* (New York, 1959.) Pp. 35. $0.30.

This publication is a by-product of United Nations efforts to equalize the purchasing power of salaries paid to U.N. officials in different countries. The price data relate to "goods and services of the kind purchased by international officials". The cost of these goods is expressed as a percentage of their price in New York at the official rate of exchange. For example, it is reported that in November, 1958, the cost of living for international officials in London was 85% of the New York cost of living. Unfortunately, the range of countries covered by the survey is very small and of very limited interest.

WACLAWOWICZ, S. *Metodyka Okreslania Stanu I Kierunku Rozwoju Produckji Podstawowych Zboz.* (On the Methodology of Estimating Yields and Production Trends of Basic Grains.) (Polish Academy of Sciences, Krakow, 1960.) Pp. 116.

This is an essay in agricultural economics and statistics of grain production based on the data available for the Krakow Region in Poland. The author applies econometric methods to the analysis of a relationship between the application of fertilizers and the yields of wheat, rye, barley and oats.

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